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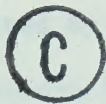
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THE EFFICACY OF A PERSONAL BEHAVIOR MANAGEMENT SYSTEM

FACULTY OF GRADUATE STUDIES AND RESEARCH

BY



SHARON ELAINE ROBERTSON

A THESIS

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ABSTRACT

The feasibility of personal management of behaviors was explored in the present investigation. In particular, the self-management of overt behaviors was considered as were changes in overt behaviors upon behavior.

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled "The Efficacy of a Personal Behavior Management System" submitted by Sharon E. Robertson in partial fulfilment of the requirements for the degree of Master of Education.

The results of the study were reported as a paper at the annual meeting of the American Psychological Association, 1972.

ABSTRACT

The feasibility of personal management of behaviors was explored in the present investigation. In particular, the self-management of overt behaviors was considered as were changes in covert behaviors upon application of intervention procedures to the overt behavior.

A training program based upon operant principles and Precise Behavioral Management techniques was developed and offered to eleven second and third year education students. Following this, behaviors to be monitored and changed were individually chosen and intervention procedures were self-selected and applied.

The results of the study were reported as eleven individual cases. Each case was presented in terms of the behaviors selected, the configurations obtained, the analysis conducted and the conclusions drawn. Although the study does not readily lend itself to a general discussion of results, in ten of the eleven cases reported, significant behavior changes were obtained.

A discussion of the applicability of this behavioral system to normal adults was offered.

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CHAPTER I

THE THESIS PROBLEM

I. INTRODUCTION

As she sat alone at home one evening, Mary began to wonder what had happened to all of her friends. It seemed that one by one over the past few months they had gradually stopped phoning her or coming to visit. When she contacted them, they were always too busy to see her. Only one of them had given her a clue as to what might be wrong. It appeared that her comments on most topics were becoming extremely critical and negative and other people found more enjoyable company elsewhere. As she continued to think about it, Mary realized that this was probably true. Losing her friends had not helped.

What can be done to help Mary solve this problem more effectively? Some approaches emphasize the fact that Mary's negative statements are surface manifestations of underlying personality problems (Stuart, 1970). Treatment would be aimed at eliminating these inner personality conditions or at least toward strengthening the defenses of the healthy portion of the personality against the destructive forces of the unhealthy ones. In contrast to this reliance upon amorphous personality constructs or similar psychoanalytic approaches, another viewpoint might be valuable. Adherents of learning theory contend that Mary's negative statements may simply have been learned. Hence, behavior modifiers might try to decrease her negative statements and increase her positive ones by systematically manipulating her environment and her behavior

consequences (Lovitt, 1970). However, the effectiveness of this procedure would be minimal unless Mary herself instituted changes and unless some means of changing other behaviors in the future were learned. Hence, one purpose of the present study is to examine the efficacy of personal management of behaviors.

Procedures which have been used in this area have varied in their approaches. In some, self-management of outer behaviors has been emphasized with the individual himself arranging appropriate consequences (Duncan, 1969; Ferster, 1965; Goldiamond, 1965; Johnson, 1969; Whitman, 1969). Thus, in the example given, Mary would learn to increase her positive statements or decrease her negative ones by systematically altering her environment and arranging contingent consequences. Other researchers have advocated personal management of inner thoughts, feelings, and urges (Bandura, 1969; Duncan, 1971a, 1971b, 1971c; Homme, 1965 and 1968). In this case Mary would be encouraged to change her positive or negative thoughts by using either external or internal consequences.

In both theories it is acknowledged that inner states do exist. However, in the former, it is assumed that inner states are lawfully determined by externally occurring events and, therefore, there is no need to be concerned with them in the production and control of behavior (Skinner, 1953). Considerable debate over this issue has arisen among various researchers. Consequently, a second purpose of the present study is to examine inner behavior while outer behavior is being changed through external consequences.

II. THE PROBLEM

Recent studies in the area of self-directed change have been based largely upon a number of strategies as outlined by Ferster (1965). However, there has been considerable variation within these investigations.

In some, treatment procedures have been applied to groups of subjects in attempting to alter the same behavior. For example, in a study by Ober (1968), some subjects were taught principles of operant conditioning as they applied to cigarette smoking. A similar approach was used by Harris (1969) in attempting to eliminate overeating. In another study with this same goal (Stuart, 1967), subjects were seen in individual interviews and instructed to follow prescribed steps based upon operant principles. Again, the rationale behind the procedures used was explained to them.

In other studies, personal selection of change goals as well as education in operant principles with self-application of these techniques have been emphasized. Thus, Goldiamond (1965) has reported some success in applying operant principles in a variety of individual personal management projects including studying and handwriting. In addition, Duncan (1969) had teenagers select and modify their own behaviors. Change projects included behaviors such as food reaches, nail biting and sarcasms. In this study, not only did subjects learn behavior modification techniques but they also learned to record and chart their behaviors using Precise Behavioral Management techniques.

Because one aim of personal management is to serve as a preventative measure in enabling subjects to develop new self-management procedures to apply to different behaviors, in the present investigation subjects are to be educated in operant principles and in Precise Behavioral Management techniques. Furthermore, since self-management of behaviors implies personal selection of change goals as well as personal selection and application of change procedures, target behaviors are to be individually chosen and intervention procedures are to be self-selected and applied.

Another aspect of the present investigation involves changes in inner behaviors. Recent work by Duncan (1971a, 1971b, 1971c) has been concerned with counting and changing inner behaviors such as anxiety, fear, loneliness and anger through external consequence. In the current study, an attempt will be made to monitor changes in inner behavior but only as a result of external consequence of outer behaviors. In other words, in terms of the example given earlier, the present investigator is concerned with whether or not Mary's positive thoughts will decrease, increase, or remain the same if her positive statements increase.

As indicated from the studies outlined above, research in personal behavioral management has been limited. One reason for this is that investigators have been in disagreement about the validity and reliability of personal data collection (Mc Fall, 1970). The reliability of inner behaviors has been particularly open to question because they are only accessible to the person within whom they occur and hence their presence, absence, and exact nature cannot be

independently verified (Bandura, 1969). In spite of this, on the assumption that each subject can discriminate the occurrence or nonoccurrence of behavior in himself, some researchers (Homme, 1965; Lindsley, 1971) have advocated examination of inner behaviors.

Therefore the central questions underlying the present research are:

1. Can a person educated in operant theory and Precise Behavioral Management technique effect changes in outer behavior?
2. Is an outer behavior change accompanied by a corresponding inner behavior change?

CHAPTER II

THEORETICAL FRAMEWORK AND RELATED RESEARCH

I. THEORETICAL FRAMEWORK

Precise Behavioral Management

Precise Behavioral Management is a system of behavior description and communication first developed by Ogden R. Lindsley (1964) at the University of Kansas. With its origins in the operant conditioning theory of B. F. Skinner (1953), Precise Behavioral Management is a self-examining, self-evaluating, and self-correcting analytic paradigm (Bijou, Peterson & Ault, 1968).

There are six basic steps involved in carrying out a Precise Behavioral Management project (Starlin, 1970). These include:

1. Pinpoint (define) a behavior to be measured.
2. Record the number of times the behavior occurs and the number of minutes during which it is being measured.
3. Compute a performance frequency (the number of times the behavior occurs in one minute).
4. Chart performance frequencies on the Daily Behavior Chart which is to be described later.
5. Change the behavior frequency either by accelerating or decelerating it.
6. Try, try and try again until the desired change is achieved.

Pinpointing

Pinpointing refers to the identification and description of a behavioral movement. An identified behavior must be

1. observable,
2. ratable (that is, occur over time and have a frequency),
3. have a beginning and an end, and
4. be repeatable (White & Alper, 1970).

In the example given in Chapter I, Mary's pinpointed behavior would be positive statements. This behavior can be observed; it occurs over time and has a frequency; it has a beginning and an end; and it can be repeated. Therefore, it satisfies all the requirements of a pinpoint.

A behavior which meets the four criteria for pinpointing as outlined above is called a "movement cycle" (Lindsley, 1964). Before any behavior can be counted, it must go through a full cycle such as from in seat to out of seat, to in seat again. This whole process is called pinpointing a movement cycle.

A test developed by Lindsley to check on whether a movement cycle has actually been pinpointed is called the Dead Man's Test (Kunzelmann, Cohen, Hulten, Martin and Mingo, 1970). According to this test, if a dead man can exhibit the behavior, it is not a movement cycle. Examples of behaviors which do not pass the Dead Man's Test are: sitting, standing, staring and listening. Examples of behaviors which do pass the Dead Man's Test are: smiles, laughs, praises and profanities.

An inner behavior such as positive thoughts is only accessible to the person within whom it occurs and for this reason, self-recording must be used. An important fact to note about inner behaviors is that

it is difficult to determine when they end. Consequently, any inner thought, feeling, or urge must be counted when it first occurs.

Sometimes a movement cycle which has a very low frequency is pinpointed. For example, a behavior such as fighting may occur so infrequently as to be nonfunctional. In this case, better pinpoints might be hits or swipes others. This process of changing a pinpoint from a low frequency movement cycle to one of higher frequency is called slicing (Lindsley, 1971).

Another method of altering a pinpoint so that the movement cycle becomes one of lower or higher frequency is by varying the accuracy with which the pinpoint is described. For example, the movement cycle, positive statements, may have a very high frequency. By restricting this to positive self statements the frequency may be lowered.

Phases

Once a movement cycle has been pinpointed, the number of times it occurs every day under specified conditions is counted. These conditions are systematically altered so as to produce a change in the frequency of the movement cycle. To show changes in conditions, three basic phases are used in any management project. These are the "Before" phase, the "During" phase and the "After" phase.

The Before phase refers to the period from the beginning of data collection in the project until the first change in plan is introduced. Hence, in this phase behaviors are simply counted and their frequencies recorded.

The During phase is the period during which some intervention is introduced to change the frequency of the movement cycle. Because the first attempts at changing frequencies are not always completely successful, other procedures are sometimes tried. Different tries or Durings are indicated by following them with a number. For example, one may have During 1, During 2, During 3 and so on.

The After phase is the period following removal of all intervention procedures. Here again, the behavior is simply counted each day without using the interventions applied in the During phases.

Planning

In the Precise Behavioral Management system it is not enough to pinpoint or define behaviors to be counted and then count them. Another important aspect involves taking into account those events in an individual's environment which could have an effect upon his behavior and then systematically altering them to produce the desired change (Kunzelmann et al, 1970). The environmental setting may be accurately described by using an "Is" plan which describes what is actually present without considering what effects these events may have on the behaviors being observed. There are five basic aspects of the environmental setting which need to be described with the movement cycle being central to all the others.

As explained earlier, a movement cycle is a behavior which is observable, ratable (occurs over time and has a frequency), has a beginning and end, and can be repeated (White & Alper, 1970). Examples of movement cycles include positive statements, compliments, greetings, conversations initiated, expressions of affection and criticisms.

Other examples of movement cycles are helping others, gossiping and bragging.

Movement cycles may not necessarily be good or bad but rather, they are appropriate or inappropriate to certain environments. Because of this, some statement should be made about the general environmental setting in which the movement cycle is of concern. Such a statement is called the "program" and usually includes the time of day, length of recording sample and location. Thus, the program generally consists of any variables which remain constant for the time period over which the occurrence of the movement cycle is being counted and recorded.

It has been contended that most behaviors which are of concern to educators are learned (Skinner, 1953) and are emitted because they bring about certain changes in the environment. If a movement cycle has no desired consequence, it will cease to be emitted. Therefore, the next step in describing the environment is to identify the event which seems to consequence the movement cycle most often (White & Alper, 1970). This environmental event which is dependent upon the movement cycle occurring is called an "arranged event" because it shares some arrangement with the occurrence of the movement cycle. Some examples of arranged events which may have an effect upon behavior are praise, grades, money, activities or free time.

Events which indicate that an arranged event may be secured also affect the occurrence of a movement cycle. Such events are called "program events" and take place whether or not the movement cycle occurs. In Mary's case, a program event might be questions asked by someone else about her work. Other examples of program events would

be reading materials or other materials used during instruction, the nature of verbal interaction, or the behavior of a peer.

There is one basic distinction between a program event and an arranged event and this is the fact that the presentation of the arranged event is contingent upon a movement cycle occurring while the presentation of the program event is not (Starlin, 1970).

Usually the movement cycle is not followed by the arranged event every time it is emitted. The relationship between the number of times a movement cycle occurs and the number of times it is followed by an arranged event is called the "arrangement" (Kunzelmann et al, 1970). The convention for representing the arrangement is to indicate the number of movement cycles, then place a colon (:) after that number and then indicate the number of arranged events that would occur following that number of movement cycles. For example, an arrangement of 1:1 means that for every movement cycle emitted, one arranged event would occur. An arrangement of 10:1 means that for every ten movement cycles emitted, one arranged event occurs while an arrangement of 3':8 means that for every 3 minutes the movement cycle occurs, 8 arranged events are received. Quite often an appropriate arranged event may not affect the movement cycle because the arrangement is inappropriate. Therefore, one method of intervention consists of changing the arrangement.

A means of systematically describing and altering the environment is by formulating an Is plan using the sheet shown in Table 1. The Is Planning and Description Sheet may be used for making

Table 1

IS DESCRIPTION AND PLANNING SHEET

Date _____

Supervisor _____ Mary Manager _____ Mary Behavior _____ Location _____

Name	Pro-gram (P)	ACCELERATION				DECELERATION			
		Program Event (PE)	Movement Cycle (MC)	Arrangement (A)	Arranged Event (AE)	P	PE	MC	A
Before 8:00 a.m. - 11:00 p.m.		not identified	positive statements counted by Mary using a golf counter	none identified	not identified				AE
During same 1		same	same	2:1	5 min. free time (painting, movie, sports)				
During same 2		same	same	5:1	same				
After same		same	same	none identified	none identified				

plans to accelerate or decelerate a behavior or to accelerate one and decelerate another. Appropriate headings are shown for indicating the phase (Name), program (P), program event, movement cycle, arrangement (A), and arranged event. The horizontal lines separate the phases (Before, During 1, During 2, ..., After). A plan for accelerating positive statements is also shown in Table 1.

It is important to note that in any project, once a behavior has been acquired under special conditions, planning should include a procedure for the slow transition from this During phase to the After phase (White & Alper, 1970). Such a plan can usually be successful if one or both of the following techniques is used.

First, the arrangement can be systematically altered so that more and more behaviors are required to obtain the same amount of the arranged event as in the plan for Mary shown in Table 1. Eventually, the arranged event is delivered so infrequently that its complete removal will have only a minimal effect on the behavior. However, if such a technique is instituted and the behavior starts to drop off, the arrangement should be held constant until the behavior increases and is maintaining again. Then the arrangement can be changed.

The second technique involves the substitution of natural arranged events for synthetic ones. For example, if Mary were using money as an arranged event, she could replace it with free time. Eventually, positive reactions from other people should maintain Mary's positive statements.

The techniques outlined above may be used in making plans for

decelerating behaviors as well. In this case, however, it is often more advantageous to vary the program event so that the behavior has less chance of occurring.

By systematically changing the components of the Is plan, those events or conditions which do have an effect upon the movement cycle may be determined and the best combination of components for changing a behavior and maintaining the change may be found.

Recording

After the movement cycle of concern has been pinpointed and a plan has been formulated for the Before phase, the next step is to obtain a daily record of how often the behavior occurs and of the number of minutes during which it was being measured. Sometimes it is desirable to measure the behavior all day in order to determine its frequency under all conditions. However, shorter time samples may be used.

Usually, direct measures of behavior are obtained on a daily basis. These are called Rated Days. However, sometimes no record of movement cycles is kept although the behavior could have occurred. These are called Ignored Days. On other days no record of movement cycles is kept because there is no chance for the behavior to occur on that day. These are called No Chance Days.

Behavior counts are kept by using one of a number of methods. Mechanical counters suggested by Kunzelmann et al (1970) include golf counters, an abacus, knitting counters, and hand tally counters used by housewives to add up grocery bills. Other methods include taping adhesive or cards to each wrist or holding cards on wrists with

watch bands and using tallies.

Once the number of movement cycles and the number of minutes during which a behavior was being counted have been obtained, they are used to compute another measure, frequency. Frequency is defined as the number of movement cycles per unit time and is calculated as follows:

$$\text{Frequency} = \frac{\text{number of movement cycles}}{\text{number of minutes recorded}}$$

If Mary smiles 20 times in 10 minutes, the frequency of her smiles is 20 smiles/10 minutes or 2 smiles/minute.

By computing frequencies, the number of behaviors occurring in one minute may be determined. This provides a standard unit of measurement for comparing the same behavior emitted by different people or for comparing the same or different behaviors emitted by one person.

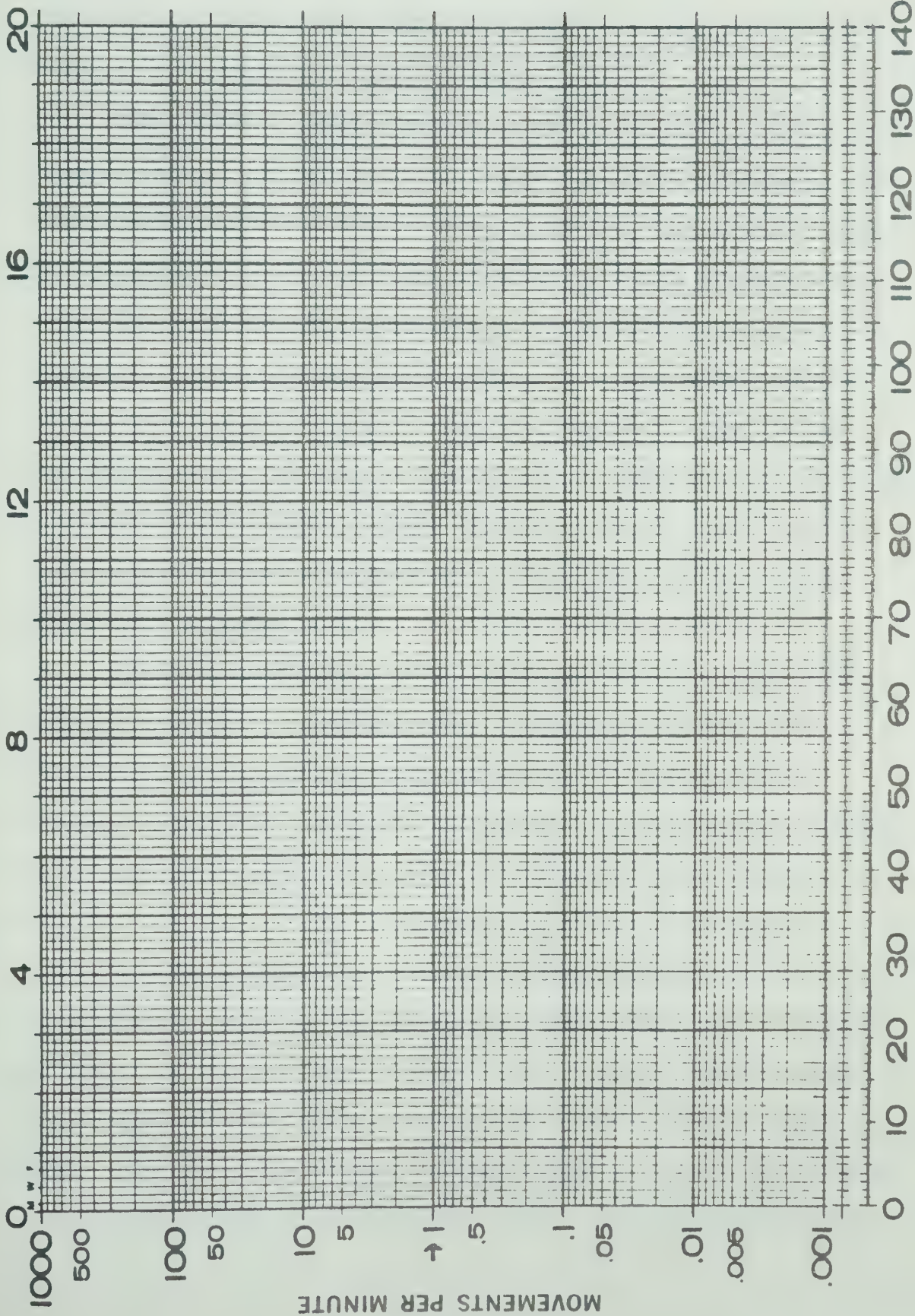
Charting

Once the frequencies of behaviors have been determined, they are recorded graphically on the Daily Behavior Chart. One reason for this is that information can be summarized much more concisely on a chart. In addition, charting daily frequencies of behaviors enables one to have daily feedback in visual form from which to evaluate present procedures and to decide whether the present Is plan needs to be changed.

The Daily Behavior Chart as shown in Figure 1 is a six-cycle semi-logarithmic chart on which days are plotted on the horizontal axis and behavior frequencies are plotted on the vertical axis. Thus it is possible to chart 140 days of data ranging in frequency from

CALENDAR WEEKS

STUDY 14 DAYS OF WKS
 METAL RESEARCH CO
 1024 3351 KANSAS CITY, KANS 66103



SUCCESSIVE CALENDAR DAYS

Figure 1

The Daily Behavior Chart

SUPERVISOR	ADVISOR	MANAGER	BEHAVIOR	AGE	LABEL	MOVEMENT
------------	---------	---------	----------	-----	-------	----------

1 movement in 1000 minutes (1000 minutes are about equal to the normal waking day) to 1000 movements in 1 minute.

The vertical lines on the Chart are called day lines with one line for each of the 140 days which may be reported on the Chart. The numbers going across the bottom of the Chart from left to right refer to successive calendar days; each heavy vertical line represents a Sunday line with the lighter lines representing Monday, Tuesday, Wednesday, Thursday, Friday and Saturday. The letters "M", "W", "F" in the upper left hand corner of the Chart represent a key for the days of the week. The numbers 0, 4, 8, 12, 16, 20 across the top of the Chart indicate the number of weeks which have passed. Above each of these cumulative week indicators is a place to put the date of the Sunday directly below it.

The horizontal lines on the Chart are called frequency lines and show how often a behavior occurs. The arrow in Figure 1 points to the 1 line going across the middle of the Chart. A dot placed anywhere on this line represents a frequency of one movement per minute. The horizontal lines directly above the 1 line represent frequencies of 2, 3, 4, 5, 6, 7, 8, 9, 10 movements per minute respectively. Thus, these lines between 1 and 10 are counted by ones. It is interesting to note that the distances between 1 and 2 and 2 and 3 are different and that the lines between 1 and 10 squeeze closer together as one approaches 10. These lines between 1 and 10 make up a cycle. Within this cycle, the distances between 1 and 2, 2 and 4, and 4 and 10 are the same so that the Daily Behavior Chart is an equal ratio chart.

The horizontal lines directly above the 10 line represent frequencies of 20, 30, ..., 100 movements per minute respectively. These lines between 10 and 100 compose another cycle and consist of steps by 10. Similarly, the lines from 100 to 1000 consist of jumps of one hundred so that these lines represent frequencies of 100, 200, 300, ..., 1000 and constitute another cycle.

The bottom half of the Chart is used to record the occurrence of behaviors which appear at lower frequencies than one time in one minute. The lowest frequency line on the Chart is the .001 line. This represents a frequency of 1/1000 movements per minute and is equivalent to one movement in 1000 minutes. Frequency lines between .001 and .01 constitute a cycle and represent steps by .001. The frequency line at .01 represents 1/100 movements per minute or 1 movement in 100 minutes. Frequency lines ranging between .01 and .1 make up a cycle with frequency lines increasing in jumps of .01. Similarly, a frequency of .1 movements/minute is the same as 1/10 movement/minute or 1 movement in 10 minutes. Horizontal lines directly above .1 represent frequencies of .2, .3, ...1 increasing in jumps of .1.

Thus, there are 6 cycles on the Daily Behavior Chart including frequency lines from 1 to 10, 10 to 100, 100 to 1000, .001 to .01, .01 to .1 and .1 to 1. Each cycle is characterized by the fact that the horizontal lines squeeze closer and closer together near the top. The reason for this is that the scale going up the left side of the Chart is a proportional scale on which equal gains are represented by

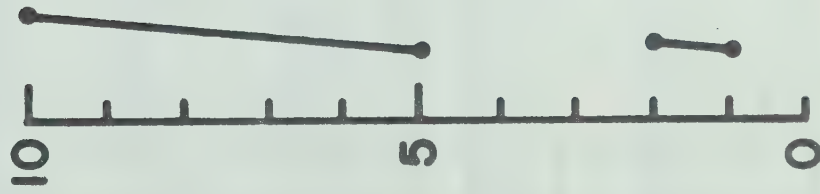
equal visual distance. In other words, the distance from 1 to 2 is the same as the distance from 10 to 20 or 100 to 200 because proportionally the gains are times two.

The distinction between this kind of chart and most graphs or charts designed to show arithmetic change is shown in Figure 2. On the arithmetic scale the distance between 5 and 10 is much greater than that between 1 and 2 although there is a change in frequency of times two in both cases. On the proportional scale the distances are equal. Another way of explaining this is that on the Daily Behavior Chart, equal percentage gains are represented by equal distance. Hence, in the example shown in Figure 2, the vertical distance shown for a gain from 1 to 2 (a gain of 100%, or the initial frequency multiplied by two) would be the same as the vertical distance shown for a gain from 5 to 10 (again a gain of 100%, or the initial frequency multiplied by two). On the arithmetic scale, on the other hand, although the percentage gain from 1 to 2 is the same as that from 5 to 10, the vertical distances are not represented as being equal.

Plotting frequencies on the Daily Behavior Chart

Once the frequency of a movement cycle has been calculated and the day on which it was measured is known, this information can be plotted on the Daily Behavior Chart. To indicate a frequency of three movements per minute on the first Monday, a dot is put on the Chart where the three line crosses the first Monday line. This is shown in Figure 3. Figure 3 also shows charted frequencies of 4 movements per minute on Tuesday and 6 movements per minute on Wednesday. On Thursday

ARITHMETIC SCALE



PROPORTIONAL SCALE



Figure 2

Comparison of the Arithmetic and Proportional Scales

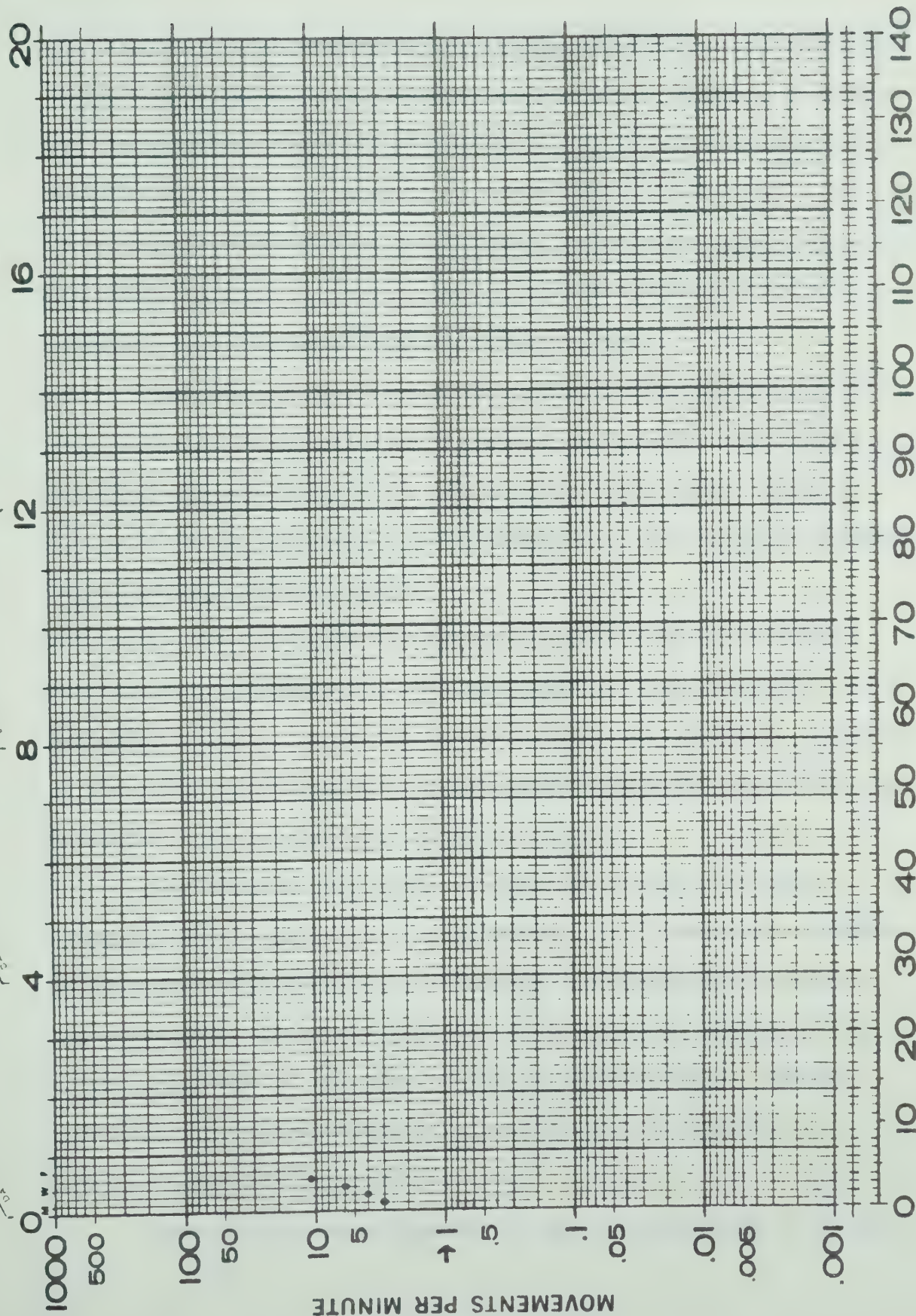
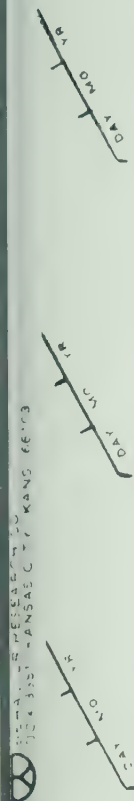


Figure 3

SUPERVISOR	ADVISER	MANAGER	BEHAVIOR	AGE	LABEL	MOVEMENT
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Charting Frequencies

the frequency was 11 movements per minute. However, this is difficult to plot on the Chart because there is no 11 line. There is a 10 line but the next line above 10 is 20. Therefore, it is necessary to estimate where an 11 line would be on the Chart and then put a dot where this line would cross the Thursday line. Notice that data points are always plotted exactly on the day lines but sometimes it is necessary to plot points between frequency lines.

When the aim of a project is to cause a behavior to increase or accelerate, it is called an "acceleration target". Data points in such projects are indicated on the Chart by using dots as shown in Figure 3. Pinpoints such as praise statements, smiles, happy thoughts might have acceleration targets.

In other projects the aim may be to decrease or decelerate the frequency of behaviors. Such projects have "deceleration targets" and employ crosses (x) to indicate data points on the Chart. Examples of pinpoints which might have deceleration targets are angry outbursts, criticisms, profanities and nagging statements.

Sometimes the aim of the project is to reach a certain frequency. For example, in a deceleration project where the pinpoint is swearing the performance aim might be zero movements per minute. The performance aim may be indicated on the Chart by placing a star on the right side of the chart at the desired frequency. However, sometimes there is no acceleration or deceleration target but a behavior is just being charted.

There is a minimum frequency at which any movement cycle may

occur during any measurement period. This minimum frequency is called the record floor and indicates where one movement in a performance sample should be charted. The record floor is calculated as follows:

$$\text{Record Floor} = \frac{1}{\text{number of minutes the behavior was counted}}$$

For example, if the behavior was counted for 5 hours or 300 minutes, the record floor would be $1/300 = .0033$ movements per minute. The record floor is indicated on the Daily Behavior Chart by drawing a horizontal dashed line between Sunday lines at the record floor frequency.

Some important implications are involved in using the record floor (Haughton, 1969). By knowing it, the number of minutes of recording can be determined. In addition, knowledge of the record floor and the frequency enables one to calculate the number of movements counted.

Sometimes the frequency at which a behavior can occur is limited by certain conditions and there is a maximum frequency which can be reached. This is called the record ceiling and is indicated on the Chart by drawing a horizontal dashed line across Sunday lines at the maximum possible frequency. However, in personal behavior projects calculation of the record ceiling is considered to be impractical.

There is no zero frequency line on the Daily Behavior Chart. A frequency of zero means that there was no performance of the behavior

during the time measured. However, the behavior may have occurred outside of the time measured. To show that a zero frequency is an arbitrary number dependent upon time, it is indicated by charting a point just under the record floor.

Phases are also indicated on the Chart. The space following the last rated day of one phase and the first day of the next phase is called the Phase Change Space. A vertical line drawn on the Chart in this space is used to separate the different phases.

The data in each phase of a project is summarized by finding the middle frequency for that phase. The convention for showing the middle frequency on the Chart in an acceleration target is to place it inside a tear drop  above that phase. The convention for showing the middle frequency in a deceleration project is to place it inside a triangle  above that phase.

Summary

The Precise Behavioral Management system involves the processes of pinpointing or defining a behavior to be changed and counting, recording and charting its frequency daily. It also involves changing the behavior frequency by altering the conditions under which the behavior occurs. By trying different intervention procedures, the desired change may eventually be produced. Because this system offers a systematic means of analyzing and changing behaviors, it is to be used in the present investigation.

II. RELATED RESEARCH

Personal Behavior Management

Within the past few years, there has been a growing interest in processes by which individuals learn to manage their own behaviors (Bandura, 1969). Terms which have been applied to this process include self-control (Ferster, 1965; Goldiamond, 1965; Kanfer & Goldfoot, 1966), self-directed change (Harris, 1969), self-management (Homme, 1966) and situational management (Stuart & Davis, 1972). In the present investigation, this process in which individuals regulate their own behaviors by identifying and manipulating environmental conditions is referred to as personal behavior management.

A review of the literature reveals that studies in this area have met with limited success. Reasons for this have included the fact that objectives have often been vaguely defined leaving the subject with little guidance concerning the actions he must take on a daily basis in order to reach his goal. On considering this problem, Bandura (1969) has stated that in any self-directed program of change, objectives must be defined in detailed behavioral terms so that behaviors can be easily identified and monitored.

Another reason why studies on self-management have had limited success is that reinforcement for exhibiting such behavior has often been insufficient to maintain it. One strategy which has been used in an effort to overcome this has been to have subjects count their behaviors on a daily basis using miniature golf counters (Kolb, Winter & Berlew, 1968). The frequency of the behaviors is then plotted graphically in an

attempt to show improvements.

Another problem associated with studies in this area and particularly in those in which aversive consequences have been used has been the occurrence of a fairly high attrition rate. In attempting to overcome this difficulty Duncan (1969) made attendance at group meetings contingent upon six days of data collection. In studies on cigarette smoking (Levinson, Shapiro, Schwartz & Tursky, 1971; Lichtenstein, 1971; Marston & McFall, 1971) a monetary deposit which was to be returned upon receipt of data at the end of the study was required.

Various principles of operant theory have readily lent themselves to analysis of self-managed behavior. These principles and their applications are discussed in more detail later.

Since behavior in this conception is largely a function of the external stimulus conditions, identifying and altering the stimulus conditions under which behavior occurs is an important aspect of personal behavior management. By introducing appropriate stimuli for desirable behaviors, the frequency of occurrence of these behaviors may be increased. Conversely, by removing stimuli which elicit undesirable behaviors, the frequency of these behaviors can be decreased. As an example, overeating has been found to increase in the presence of appetizing food. Consequently, one means by which this behavior may be reduced is by removing food from view (Stuart & Davis, 1972).

Another means of managing behavior involves narrowing stimulus control or limiting the conditions under which behavior occurs. Hence, in establishing stimulus control of studying, Goldiamond (1965) suggested that studying be confined to one desk. When students found their

thoughts wandering, they were instructed to leave the situation and try some other activity. Similarly, in studies on obesity Stuart (1967) recommended that eating be confined to the dining area and to specific times during the day while Goldiamond (1965) suggested that activity be restricted to that behavior alone thus eliminating watching television, reading, or talking on the telephone while eating. In an attempt to eliminate cigarette smoking, Levinson et al. (1971) tried to reduce the effects of situational cues on smoking by having subjects smoke only at pre-set random times using a signalling device.

By using a number of different tactics, some researchers have attempted to interrupt the chain of events between the stimulus and response. In an experiment dealing with tolerance to noxious stimulation Kanfer and Goldfoot (1966) found that tolerance was increased by using self controlling behaviors employing external stimulation rather than verbal devices. Similarly, Harris (1969) suggested three methods for breaking the chain of eating. These included not putting any food on the fork until the last bite of food had been chewed and swallowed, chewing slowly with attention to taste and texture, and taking breaks near the end of the meal.

One of the biggest problems encountered in establishing self-management behaviors appears to involve providing sufficient reinforcement for these behaviors. This is particularly true in the case of addictive behaviors such as smoking, over-eating, alcoholism and sexual deviation (Ober, 1968) where immediate positive reinforcement for the undesirable behavior is provided while positive reinforcement for desirable behaviors is usually extremely delayed. Furthermore, the

aversive consequences of addictive behavior are usually delayed for weeks or even years and fear of negative consequences is usually extinguished when behavior is performed without negative reinforcement following it. Consequently, self-reinforcing operations are usually employed to provide immediate support for self-regulating behaviors until the benefits which eventually build up take over the reinforcing function.

The contingencies and consequences which individuals arrange for themselves may take a variety of forms. Individuals may select activities which they find rewarding and make them contingent upon the performance of desired behavior. Thus, reading, playing sports, watching television, drinking coffee, or eating may be used as reinforcers (Bandura, 1969). High probability behaviors have also been used as reinforcers by making them contingent upon the performance of a desired behavior. Thus, for example, Mahoney (1971) made cigarette smoking contingent upon occurrence of a positive self-thought. In a study on weight reduction (Horan, 1970), high probability behaviors were defined as non-eating activities which occurred at least seven times a day. Accordingly, behaviors such as sitting down on a particular chair were made contingent upon the thinking of positive and negative thoughts about eating. This group lost significantly more weight than a delayed treatment control group.

Aversive consequences have also been applied to some undesirable behaviors both symbolically (Cautela, 1969; Homme; 1965) and through the use of portable stimulation devices (Powell & Azrin, 1968). While application of the latter method to cigarette smoking resulted in

a high attrition rate among subjects, Cautela (1969) has reported considerable success in applying symbolically induced aversion in the treatment of obesity.

Summary

A review of the literature reveals that studies in self-management have met with limited success because of poorly defined objectives and insufficient reinforcement for exhibiting self-controlling behavior (Bandura, 1969). In addition, some studies have been marked by high attrition rates. Consequently, in the present investigation target behaviors were pinpointed and counted for a trial period in order to determine the conditions under which they occur and behaviors were also counted, recorded and charted on a daily basis in order to show improvement.

Principles of operant theory which have already been applied to the problem of self-management include identifying and altering the stimulus conditions under which behaviors occur, interrupting response chains, and arranging appropriate contingencies and consequences. However, studies in which these principles have been applied have usually been concerned with reducing cigarette smoking or overeating. In contrast to this, in the present investigation target behaviors were individually chosen providing for a wide variety of possibilities and emphasis was placed upon both increasing and decreasing the frequencies of behaviors.

III. THE STUDY

The Direction of the Study

In most behavior management projects reported in the literature, behavior changes have been instituted by systematically altering either the behavioral environment or the behavioral consequences or both. However, due to a lack of knowledge of fundamental behavioral principles on the part of the behavior, decisions concerning the behaviors to be changed and means by which this is to be done have largely been made by the experimenter. Consequently, the subject's involvement in changing his own behavior has been minimal. In the current study emphasis was placed on educating subjects in the basic principles of operant conditioning and the techniques of Precise Behavioral Management in an attempt to provide the subject with a sound theoretical framework from which to operate.

One aspect of behavior management studies which has caused considerable controversy has been the validity and reliability of personal data collection. As a result, few studies have been conducted in which subjects have monitored their own behaviors. In the present investigation, target behaviors were self-selected, behavior frequencies self-recorded, and alterations self-selected and applied.

Argument over the value of studying inner behaviors has also existed (Skinner, 1953; Homme, 1965) and studies in which frequencies of inner behaviors have been used as basic data have been limited. Therefore, one further aspect of this investigation involved the self-selection and self-recording of inner behaviors.

Scope of the Study

Population and areas of investigation

The population consisted of 11 students enrolled in a course in Educational Psychology at the University of Alberta. This group was chosen for two practical reasons:

1. they were available for training in class
2. consequences for accurate data collection could be controlled.

In this study there were two main areas of investigation. These consisted of the frequency of outer behaviors and the frequency of inner behaviors. Both of these were observable to the subject himself and both could be measured continuously on a daily basis.

Design of the Experiment

In the present investigation, each subject served as his own control. Personal behavior management involves the self-selection of target behaviors which are to be changed as well as self-selection and application of change procedures. Attempts to match all behavioral characteristics in an effort to use outside controls were considered to be impractical.

In accordance with Duncan's (1971a) suggestion concerning the measurement of inner behaviors, a period of one week was allotted at the beginning of the study for each subject to adjust to counting his own behaviors. Data from this week were not used in the analysis of the results.

Following this, the study consisted of three main phases.

In the baseline period subjects simply monitored their own behaviors in order to determine the operant level. Then intervention procedures were applied for three weeks in an effort to increase or decrease the frequency of the outer behavior. In the last phase, all intervention procedures were removed and the outer behavior was monitored to determine the post operant level.

A follow-up study was conducted two weeks later. Here, the outer behavior was again monitored to determine whether or not any behavior changes were being maintained.

The inner behavior was monitored in all phases of the study. However, no intervention procedures were attempted with inner behavior.

CHAPTER III

PROCEDURE AND DESIGN

I. THE SAMPLE

The sample consisted of students enrolled in one section of Educational Psychology 471, a course in learning theory, at the University of Alberta. Each subject used his own data in submitting a project as partial fulfillment of the course requirements. Grades were contingent upon accurate data collection but not upon direction of changes.

II. INSTRUMENTS

Two instruments were used in the present investigation. They included the Daily Behavior Chart and the Is Description and Planning Sheet. Both of these were formulated by Dr. O. R. Lindsley at the University of Kansas. The primary measurement datum consisted of daily behavior frequencies thus making the results direct, continuous, and individually relevant (Lovitt, Schaaf & Eaton, 1971).

The Daily Behavior Chart

The Daily Behavior Chart has been described in considerable detail in Chapter II. Because this is a standardized six-cycle semi-logarithmic chart, equal distances on it represent equal percentage gain. According to Lindsley (1971), other advantages in using this type of chart are as follows:

1. Since the Chart is standardized, it does not bias the

behavior measured. Hence, a comparison across projects can be made without recharting the data.

2. The standardized vertical scale encompasses the range (in terms of frequency) of all human behavior that could occur in an average waking day.
3. Because all Charts are calendar synchronized, weekly patterns announce other influences which may be affecting behaviors.
4. Best fit lines are good approximations to an "average effect" over time analysis and allow effective predictions of future data.

One disadvantage in using a proportional scale lies in the fact that it is difficult to determine exact scores once they have been placed on the Chart. However, the main concern is not with individual frequencies but rather with an overall trend which is the real indication of change.

The Is Description and Planning Sheet

The Is Description and Planning Sheet is a descriptive and functional planning system first introduced by Lindsley in 1964 and more recently updated (Lindsley, 1969). This sheet has been described in considerable detail in Chapter II. It has been included as part of the present study because it aids systematic analysis of all aspects of a behavior's environment and also provides a concise means of summarizing the various projects undertaken.

III. THE TRAINING PROGRAM

The training program consisted of three main parts including

1. reading and discussion of the basic principles of operant conditioning.
2. oral presentation of Precise Behavioral Management techniques and
3. additional consultation time with the experimenter.

The reading assignments and the major principles of operant conditioning discussed are shown in Appendix A. These topics were covered in fifty minute classes by the instructor.

Oral presentations of Precise Behavioral Management techniques as described in Chapter II were conducted during four fifty-minute sessions. Topics covered during each session are shown in Appendix B. Subjects were also given Daily Behavior Charts, Is Description and Planning Sheets and the daily recording sheets shown in Appendix C. Additional materials included an exercise on calculating frequencies and plotting frequencies on the Daily Behavior Chart shown in Appendix D, and an exercise on calculating record floors shown in Appendix E. Subjects also received copies of the behavior charting conventions shown in Appendix F, components of the Is plan shown in Appendix G and a charting project checklist shown in Appendix H.

Finally, three hours each week were made available for subjects to discuss their projects with the experimenter.

IV. PROCEDURE

After the first session of the training program, subjects selected one outer behavior which they wished to change and the corresponding inner behavior. One week was allotted in which subjects monitored these behaviors in an effort to adjust to counting.

Following this, the study consisted of three main phases: Before, During and After. In each of these phases outer behaviors were counted, recorded and charted on a daily basis. Each of these phases is described in more detail below:

1. The Before Phase. In the Before Phase, the outer behavior was monitored for four days to one week in an attempt to determine its operant level. In this period each subject formulated his own Is plan describing the conditions under which the behavior was being emitted.
2. The During Phase. The During Phase lasted for three weeks. On the basis of the data obtained in the Before phase, at the beginning of the During phase subjects selected a performance aim or frequency at which they wished the outer behavior to be emitted. Then by systematically applying different intervention procedures, attempts were made to reach this aim within the three week period. The first intervention procedure was initially applied for one week. If, at the end of this time, the data indicated that the performance aim would be reached, this intervention procedure was continued. This phase was termed During 1

or "during the first try" and varied from a minimum of 4 days to a maximum of three weeks among subjects. If, after the first intervention procedure was applied for one or two weeks, the data indicated that the frequency of the outer behavior was not changing fast enough to reach the performance aim after a total of three weeks of intervention, a new procedure was formulated and instituted. This new phase in which the second plan was tried was called During 2 and varied from a minimum of one week to a maximum of two weeks among subjects. It is to be noted that because some subjects only tried one intervention procedure, no During 2 phase existed for them. If two intervention procedures had been applied within two weeks and the data indicated that the performance aim for the outer behavior would not be reached after one more week under the existing conditions, a third intervention procedure was formulated and instituted. This constituted the During 3 phase and lasted for a maximum of one week.

3. The After Phase. In the After phase, all intervention procedures were removed and the outer behavior was monitored in an attempt to determine its post operant level. This phase was divided into two parts called After 1 and After 2.

In After 1 which immediately followed the During phase, subjects counted, recorded and charted their outer behaviors for four days to one week.

Two weeks after the After 1 phase was completed, a follow-up study was carried out for one week. This constituted the After 2 phase and during this period, subjects again simply counted, recorded and charted their outer behaviors keeping conditions the same as in the Before phase. The purpose of the follow-up study was to determine whether or not any behavior changes were being maintained.

Throughout all seven weeks of the study, each subject counted, recorded and charted the frequency of his specified inner behavior each day. No intervention procedures were applied.

V. ANALYSIS

In the present study frequency measures obtained by each subject during the Before or baseline phase were compared with those obtained in each phase thereafter to determine whether or not significant changes had occurred. This was done for both the outer and inner behaviors.

Since this study essentially consisted of an interrupted time series design, shifts in frequency were possible. According to Sween & Campbell (1965), the Double Mood test may be used to investigate significant differences in frequency. This test is concerned with the difference between pre-change and post-change regression estimates of a point lying mid-way between the last pre-change point and the first post-change point (Mood, 1950, pp. 350-358; Walker & Lev, 1953, pp. 390-400). A t-test is used to determine the significance of the

differences between these pre-change and post-change regression estimates of the frequency.

CHAPTER IV

FINDINGS AND CONCLUSIONS

I. Introduction

Since the target behaviors chosen and the intervention procedures applied varied among subjects, in the present investigation each subject served as his own control and data was analyzed on an individual basis. In the following section, findings are to be presented as individual cases. Each case has been divided into four parts including:

1. the behavior to be changed
2. the configurations obtained
3. findings
4. conclusions.

Is plans for each case may be found in Appendix I and copies of the Daily Behavior Charts are located in Appendix J. On these Charts as well as in all figures hereafter, the Before, During 1, During 2, During 3, After 1 and After 2 phases are to be identified by the conventions B1, D1, D2, D3, A1 and A2 respectively.

II. Cases

Case 1

Behavior. The subject, E.A., considered herself to be a reserved person and usually wore a stern facial expression. The outer behavior which she pinpointed and eventually tried to accelerate was

smiling at someone with whom she did not have a speaking acquaintance whenever their eyes met. The corresponding inner behavior was defined as an urge to smile at any stranger whose eyes met hers.

Configurations. Charts of the outer and inner behaviors for Case 1 have been shown in Figure 4. As can be seen from these charts, frequencies of both smiling and urges to smile rose steadily from the Before phase to the After phase.

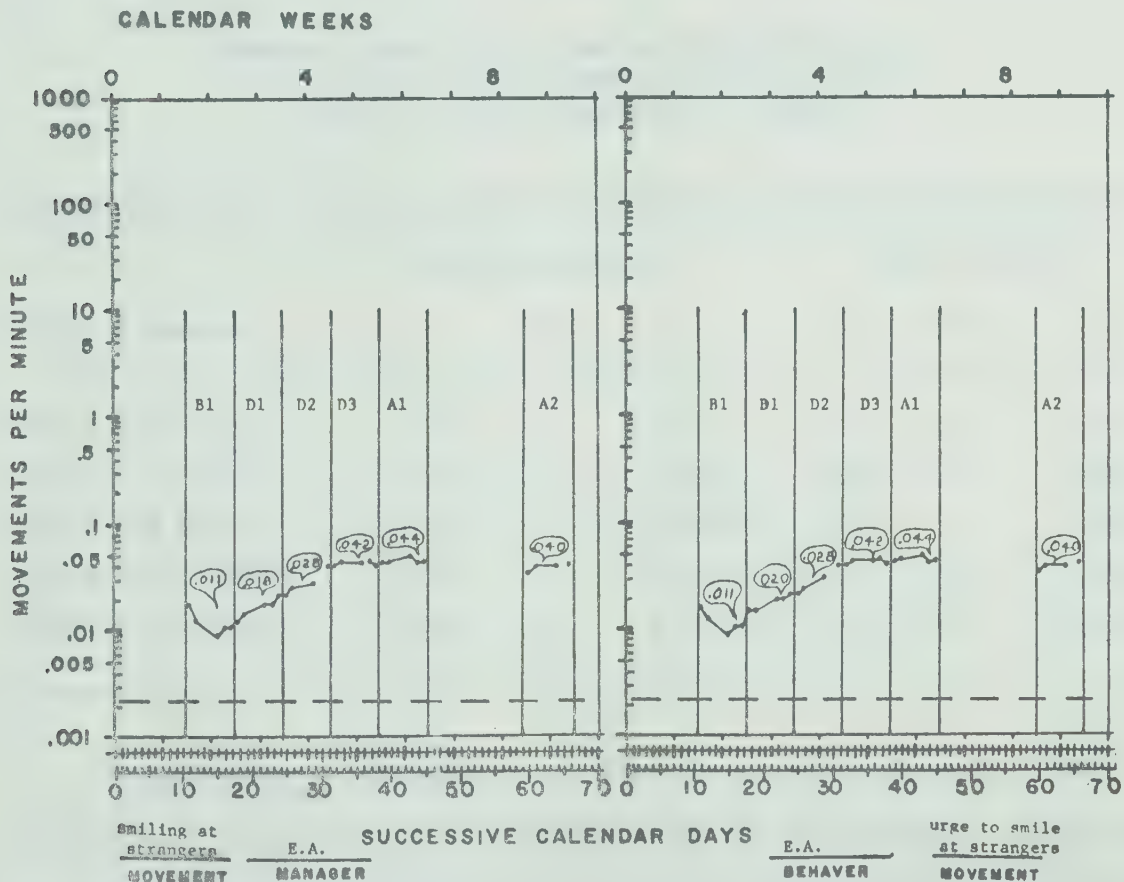


Figure 4

Outer and Inner Behaviors (Case 1)

Findings. In order to determine whether the observed increases in the frequencies of the outer and inner behaviors in Case 1 were significant, the Double Mood test was applied. As may be observed from the results shown in Table 2, the estimated shift in frequency between the Before phase and During 1 for the outer behavior was not significant. However, all other shifts were significant beyond the .05 level.

Table 2

Summary, Double Mood Test of Significance of
Estimated Frequency Shifts Between Phases
(Outer and Inner Behaviors - Case 1)

Phases Compared	Outer Behavior			Inner Behavior		
	t	df	p	t	df	p
Before and During 1	1.45	6	N.S.	2.15	6	<.05
Before and During 2	2.57	5	<.025	3.10	5	<.025
Before and During 3	10.03	6	<.0005	10.03	6	<.0005
Before and After 1	10.25	6	<.0005	10.25	6	<.0005
Before and After 2	8.84	5	<.0005	8.84	5	<.0005

Conclusion. Introduction of the intervention procedure for subject E.A. (Case 1) produced increases in the frequency of smiles and urges to smile. Furthermore, these increases were maintained after the intervention procedures were removed.

Case 2

Behavior. The subject, J.C., wanted to stop biting her nails

and the cuticles around her nails and selected this as her outer behavior. The inner behavior corresponding to this was defined as thinking about biting her cuticle or nails.

Configurations. Charts of the outer and inner behaviors for Case 2 have been exhibited in Figure 5. Examination of these charts seems to indicate that the frequency of nail biting (outer) decreased below that of baseline while the frequency of inner thoughts increased above that of baseline.

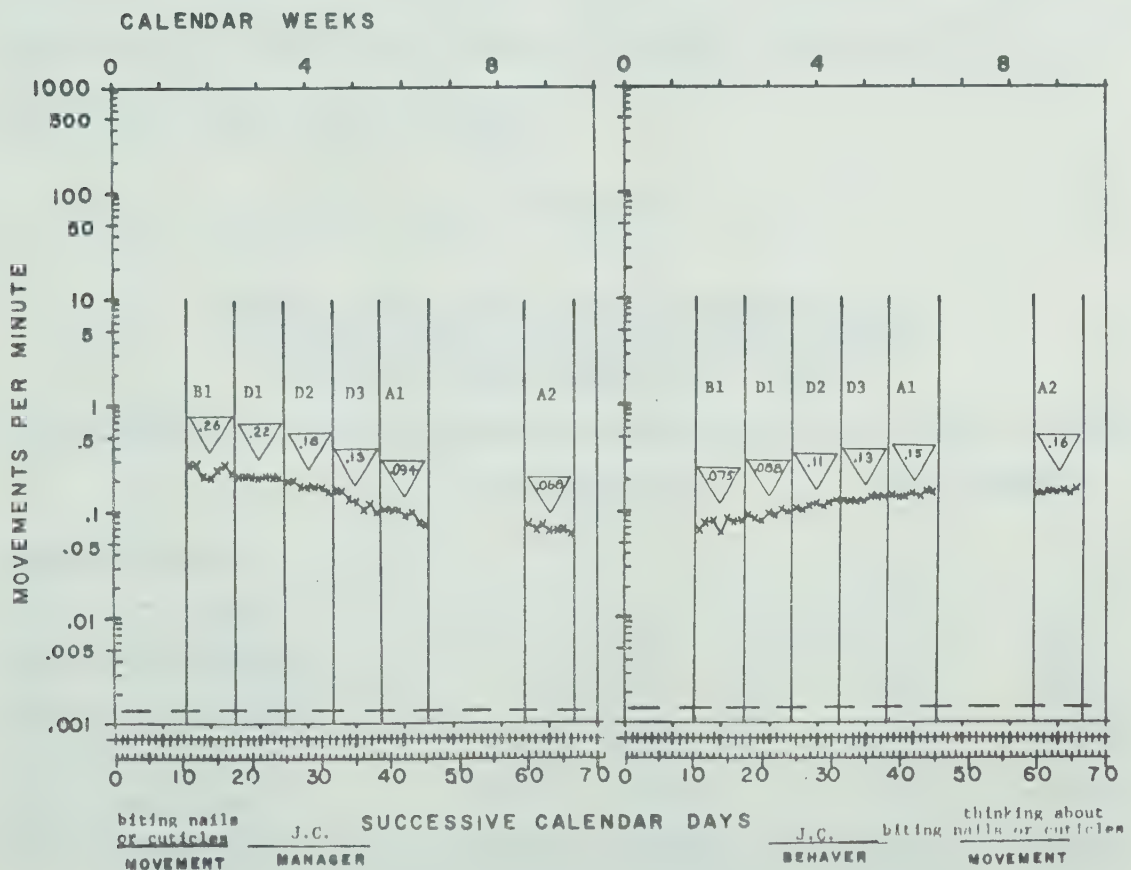


Figure 5

Outer and Inner Behaviors (Case 2)

Findings. For the purpose of determining whether the observed decreases in the frequency of the outer behavior in Case 2 were significant, the Double Mood test was applied. Inspection of Table 3 reveals that the estimated frequency shifts between the Before phase and the During 1 and 2 phases were not significant. However, all other frequency shifts were significant beyond the .025 level.

To provide evidence that the observed increases in the frequency of the inner behavior were significant, the Double Mood test was again applied. As can be seen from the results in Table 3, the estimated frequency shift between the Before phase and the During 1 phase was not significant. However, all other frequency shifts were significant beyond the .01 level.

Table 3

Summary, Double Mood Test of Significance of
Estimated Frequency Shifts Between Phases
(Outer and Inner Behaviors - Case 2)

Phases Compared	Outer Behavior		Inner Behavior	
	t	p	t	p
Before and During 1	0.44	N.S.	0.14	N.S.
Before and During 2	1.67	N.S.	3.21	<.005
Before and During 3	2.63	<.025	8.75	<.0005
Before and After 1	5.30	<.0005	10.11	<.0005
Before and After 2	6.99	<.0005	13.35	<.0005

df=10

Conclusion. Introduction of the intervention procedure for J.C. (Case 3) eventually produced a decrement in nail biting but an increment in inner urges. In addition, these changes were maintained upon removal of the intervention.

Case 3

Behavior. In this case the subject, D.C., wished to decrease but not necessarily eliminate his behavior of swearing aloud. Consequently, this behavior as well as inner swearing was counted.

Configuration. Charts of the outer and inner behaviors for Case 3 have been presented in Figure 6. From these charts it appears that overt swearing decreased and that covert swearing increased over baseline.

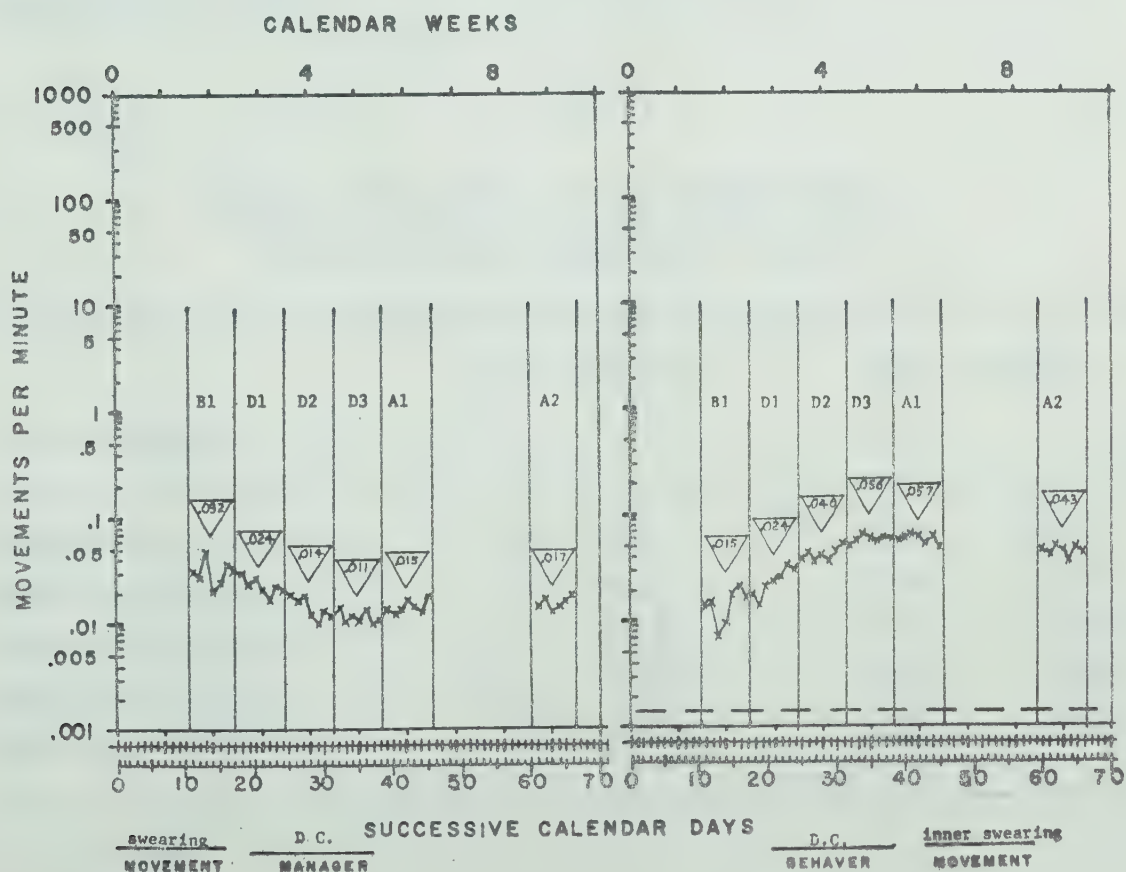


Figure 6
Outer and Inner Behaviors (Case 3)

Findings. As a means of ascertaining whether the observed decreases in the frequency of the outer behavior in Case 3 were significant, the Double Mood test was applied. An examination of Table 4 reveals that the estimated frequency shifts between the Before and the During 1 and 2 phases were not significant. However, all other frequency shifts were significant beyond the .025 level.

In order to determine whether the observed increases in the frequency of the inner behavior were significant, the Double Mood test was again applied. Inspection of Table 4 indicates that the estimated frequency shift between the Before and the During 1 phase was not significant. However, all other frequency shifts were significant beyond the .01 level.

Table 4

Summary, Double Mood Test of Significance of
Estimated Frequency Shifts Between Phases
(Outer and Inner Behaviors - Case 3)

Phases Compared	Outer Behavior		Inner Behavior	
	t	p	t	p
Before and During 1	0.40	N.S.	1.14	N.S.
Before and During 2	1.75	N.S.	3.39	<.005
Before and During 3	2.47	<.025	7.25	<.0005
Before and After 1	2.50	<.025	7.90	<.0005
Before and After 2	2.32	<.025	4.97	<.0005

df=10

Conclusion. For subject D.C. (Case 3) introduction of the intervention procedures produced less overt swearing but more covert swearing. Moreover, these shifts were maintained after intervention ceased.

Case 4

Behavior. The subject, M.J.C., believed that whenever she felt upset, aggravated or annoyed, she swore. Since she considered swearing to be an undesirable behavior, she decided to try to decrease it. Therefore, she counted this behavior as well as her urges to swear.

Configurations. Charts of the outer and inner behaviors for Case 4 have been shown in Figure 7. These charts suggest that the frequencies of both swearing and urges to swear went below those of baseline.

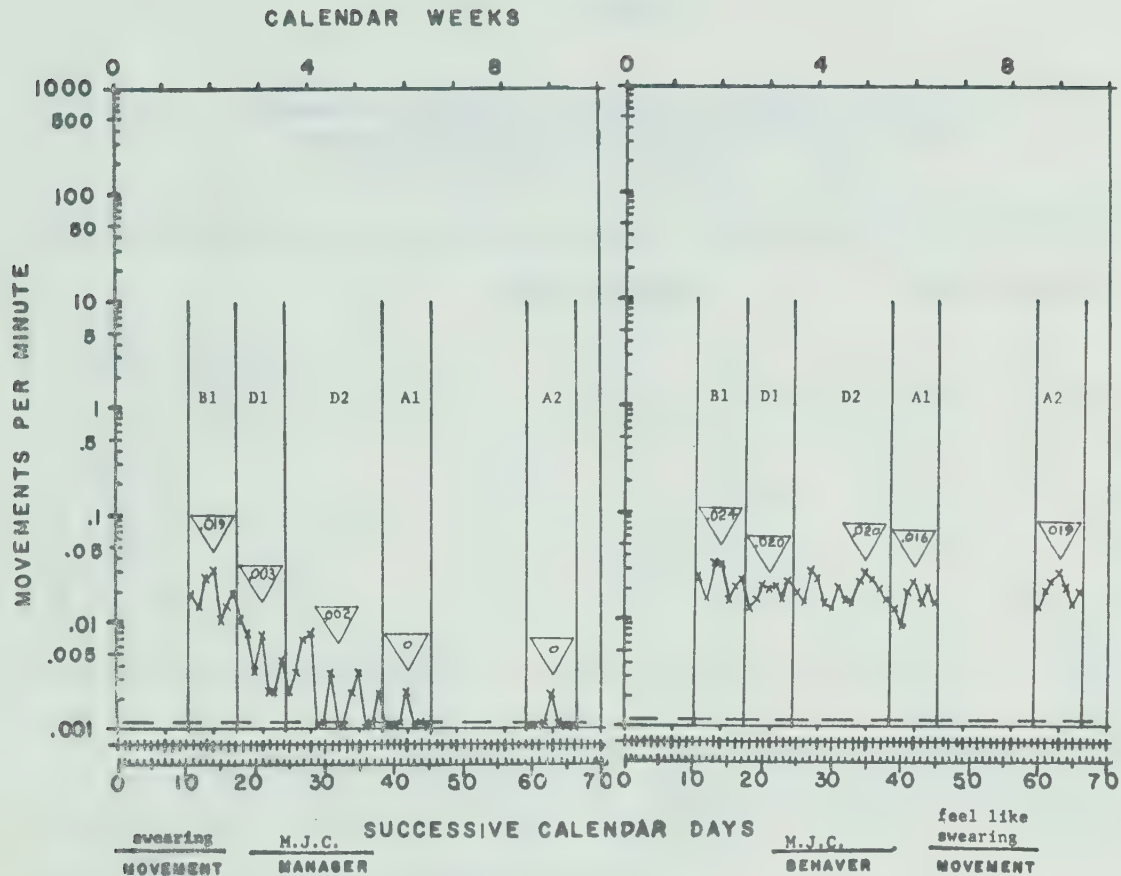


Figure 7

Outer and Inner Behaviors (Case 4)

Findings. The Double Mood test was applied to the data of Case 4 to determine whether the observed decreases in the frequency of the outer and inner behaviors were significant. As can be seen from Table 5, the estimated frequency shift between the Before phase and the During 1 phase for the outer behavior was not significant. However, all other frequency shifts for the outer behavior were significant beyond the .01 level. For the inner behavior, no significant shifts in frequency were obtained.

Table 5

Summary, Double Mood Test of Significance of
Estimated Frequency Shifts Between Phases
(Outer and Inner Behaviors - Case 4)

Phases Compared	Outer Behavior			Inner Behavior		
	t	df	p	t	df	p
B and D1	1.39	10	N.S.	0.72	10	N.S.
B and D2	3.16	17	<.005	0.42	17	N.S.
B and A1	2.91	10	<.01	1.24	10	N.S.
B and A2	2.89	10	<.01	0.41	10	N.S.

Conclusion. For subject M.J.C. (Case 4) introduction of the intervention procedures ultimately produced a reduction in swearing but no change in urges to swear resulted.

Case 5

Behavior. The subject, L.F., noted that over the few weeks prior to the study she had found herself exploding in anger a number of times each day. Such explosions usually involved raising her voice and sometimes throwing objects. Consequently, she decided to count her angry outbursts which were defined as yells or hollers following an action or verbal comment made by someone else giving directions or orders. The inner behavior which she also counted consisted of her angry thoughts.

Configurations. Charts of the outer and inner behaviors for Case 5 have been exhibited in Figure 8. From these charts, it appears that both angry outbursts and angry thoughts decreased below baseline.

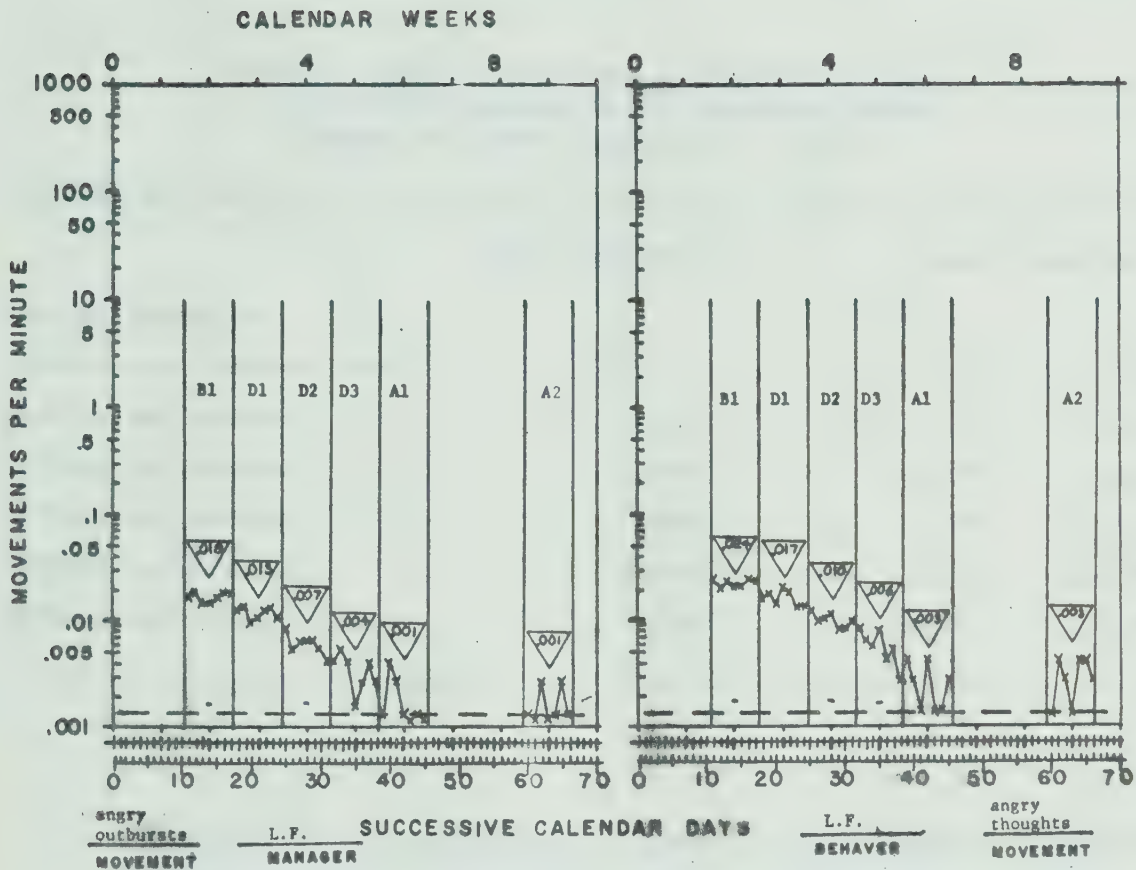


Figure 8

Outer and Inner Behaviors (Case 5)

Findings. As a means of discovering whether the observed decreases in the frequencies of the outer and inner behaviors in Case 5 were significant, the Double Mood test was applied. Inspection of the results shown in Table 6 reveals that the frequency shifts between the Before phase and all other phases for both the outer and inner behaviors were significant beyond the .025 level.

Table 6

Summary, Double Mood Test of Significance of
Estimated Frequency Shifts Between Phases
(Outer and Inner Behaviors - Case 5)

Phases Compared	Outer Behavior		Inner Behavior	
	t	p	t	p
Before and During 1	2.70	<.025	2.45	<.025
Before and During 2	5.65	<.0005	6.99	<.0005
Before and During 3	7.30	<.0005	8.86	<.0005
Before and After 1	8.04	<.0005	11.75	<.0005
Before and After 2	9.37	<.0005	12.32	<.0005

df=10

Conclusion. For subject L.F. (Case 5) angry outbursts and angry thoughts decreased upon introduction of the intervention procedures. Moreover, these decreases were maintained after intervention ceased.

Case 6

Behavior. The subject, M.J.G., wanted to stop scratching her skin and rubbing her eyes removing her make-up. As a result, she defined this as her outer behavior. Her inner behavior consisted of the urge to scratch her skin or rub her eyes.

Configurations. Charts of the outer and inner behaviors for Case 6 have been presented in Figure 9. Examination of these charts seems to indicate that outer behavior of scratching skin and rubbing eyes as well as the inner behavior of urges to scratch skin or rub eyes went

down below baseline.

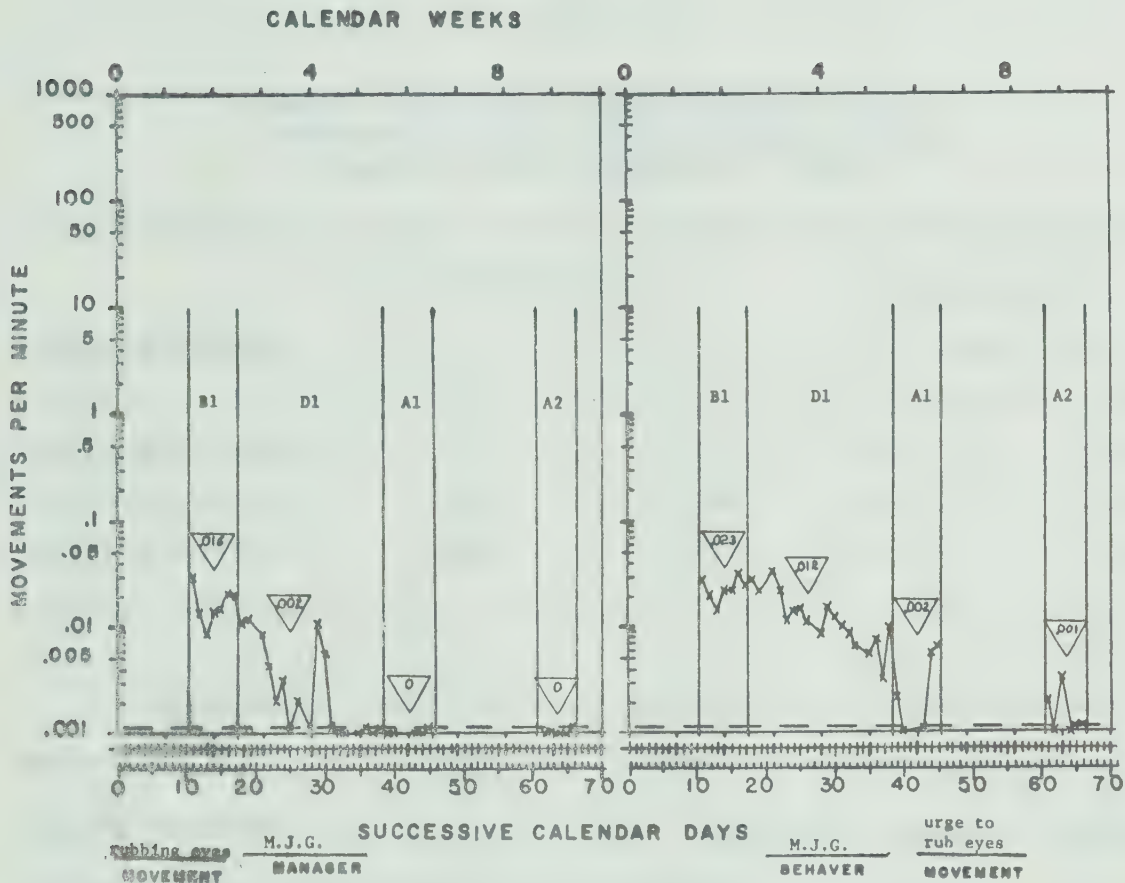


Figure 9

Outer and Inner Behaviors (Case 6)

Findings. The Double Mood test was applied to the data in Case 6 for the purpose of determining whether the observed decreases in the frequencies of the outer and inner behaviors were significant. As may be observed from the results shown in Table 7, the estimated frequency shift between the Before and During 1 phase for the inner behavior was not significant. However, all other frequency shifts were

significant beyond the .05 level.

Table 7

Summary, Double Mood Test of Significance of
Estimated Frequency Shifts Between Phases
(Outer and Inner Behaviors - Case 6)

Phases Compared	Outer Behavior			Inner Behavior		
	t	df	p	t	df	p
Before and During 1	2.07	21	<.05	0.49	21	N.S.
Before and After 1	2.43	8	<.025	5.49	8	<.0005
Before and After 2	2.62	9	<.025	5.74	9	<.0005

Conclusion. Introduction of the intervention procedure for subject M.J.G. (Case 6) produced a decrement in scratching skin and rubbing eyes which was maintained after intervention ceased. Ultimately, a decrement in inner urges was also produced.

Case 7

Behavior. The subject, D.M., had been gaining weight and was facing the problem of buying new clothes. She found that she often ate between meals and decided to try to eliminate this habit. As a result, her outer behavior of snacks between meals was defined as anything eaten between meals such as a chocolate bar, sandwich, piece of cake or cookies. Her corresponding inner behavior of urges to eat between meals consisted of thinking about food and looking into the refrigerator or

cupboards for something to eat.

Configurations. Charts of the outer and inner behaviors for Case 7 have been shown in Figure 10. From an examination of these charts it appears that both snacks (outer) and urges to eat between meals (inner) decreased below baseline.

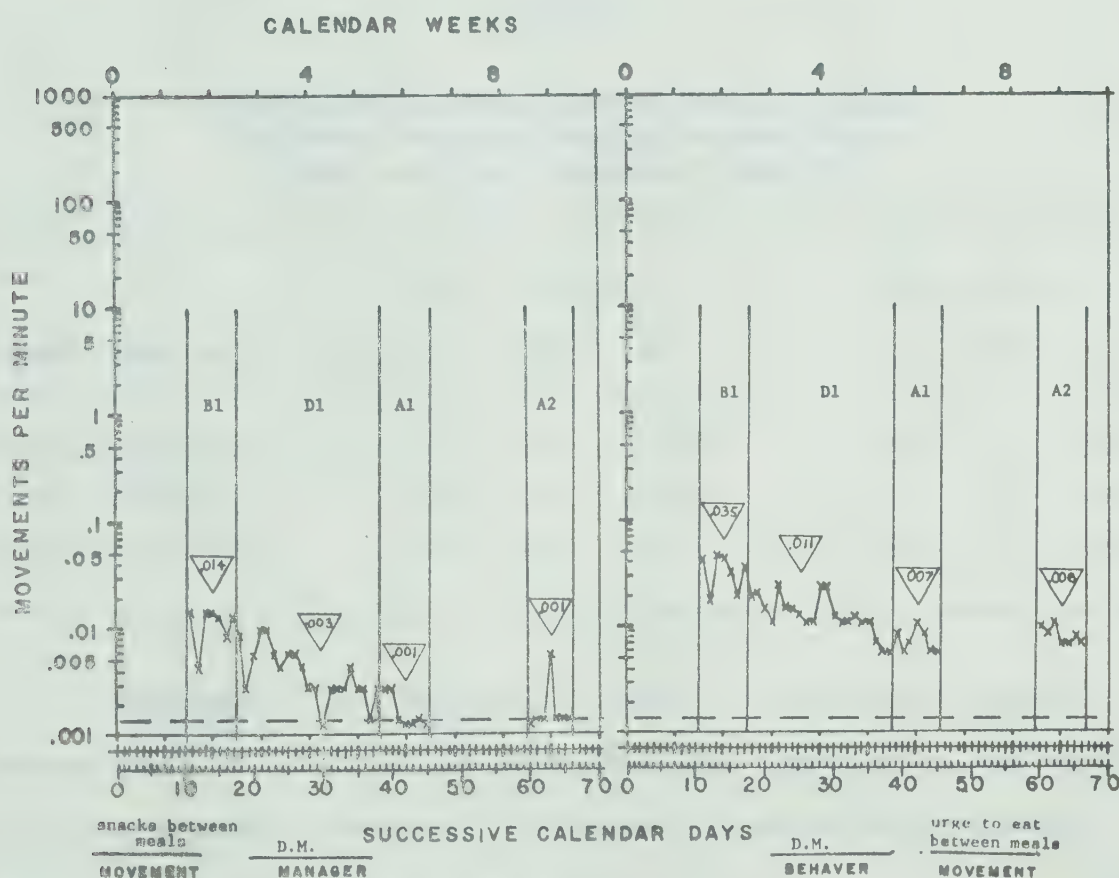


Figure 10

Outer and Inner Behaviors (Case 7)

Findings. In order to determine whether the observed decreases in the frequencies of the outer and inner behaviors were significant, the Double Mood test was applied. Examination of the results exhibited in Table 8 indicates that the estimated frequency shift between the Before and During 1 phases for the inner behavior was not significant. However, all other frequency shifts were significant beyond the .05 level.

Table 8

Summary, Double Mood Test of Significance of
Estimated Frequency Shifts Between Phases
(Outer and Inner Behaviors - Case 7)

Phases Compared	Outer Behavior			Inner Behavior		
	t	df	p	t	df	p
Before and During 1	2.13	24	<.025	1.60	24	N.S.
Before and After 1	2.61	10	<.025	2.21	10	<.05
Before and After 2	2.85	10	<.01	2.06	10	<.05

Conclusion. For subject D.M. (Case 7) a decrease in snacks between meals was produced and maintained upon introduction and removal of the intervention procedure. A decrement in urges to eat between meals was eventually produced as well.

Case 8

Behavior. The subject, E.M., wanted to lose weight and decided to count the number of bites of food she ate each day. One food bite was defined so that the movement cycle began when she opened her mouth

to bite food and ended when her teeth made the first closed position. In order to account for liquids, E.M. used a standard whereby soft drinks (1 glass) was equivalent to ten bites and hard drinks (1 glass) was equal to thirty bites. Since she drank black coffee which contained no calories, this was not counted. The inner behavior, food urges, was also counted.

Configurations. Charts of the outer and inner behaviors for Case 8 have been presented in Figure 11. Inspection of these charts seems to indicate that the outer behavior (food bites) decreased below baseline. On the other hand, the inner behavior (food urges) rose above baseline and then went down below it.

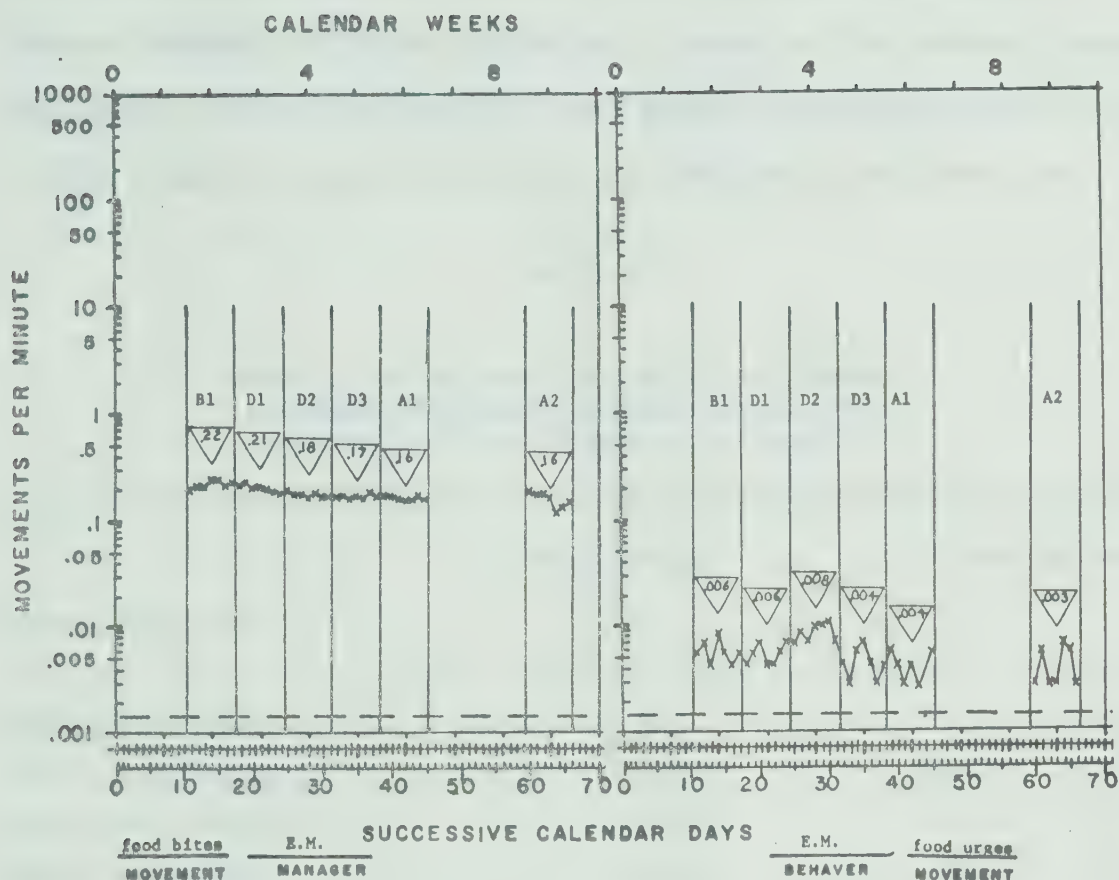


Figure 11

Outer and Inner Behaviors (Case 8)

Findings. As a means of ascertaining whether the observed decreases in the frequency of the outer behavior in Case 8 were significant, the Double Mood test was applied. An examination of the results in Table 9 reveals that the estimated frequency shift between the Before and During 1 phases was not significant. However, all other frequency shifts for the outer behavior were significant beyond the .01 level.

The Double Mood test was also applied to the data from Case 8

to show that the observed increase in the frequency of the inner behavior between the Before and During 2 phase and the observed decrease between the Before phase and all other phases were significant. As can be seen from the results in Table 9, no differences were obtained.

Table 9

Summary, Double Mood Test of Significance of
Estimated Frequency Shifts Between Phases
(Outer and Inner Behaviors - Case 8)

Phases Compared	Outer Behavior		Inner Behavior	
	t	p	t	p
Before and During 1	0.52	N.S.	0.37	N.S.
Before and During 2	4.85	<.0005	1.27	N.S.
Before and During 3	6.53	<.0005	0.40	N.S.
Before and After 1	6.62	<.0005	0.44	N.S.
Before and After 2	3.45	<.005	0.83	N.S.

df=10

Conclusion. Introduction of the intervention procedures for subject E.M. (Case 8) eventually resulted in fewer food bites but food urges did not change.

Case 9

Behavior. The subject, D.S., found that he had an undesirable habit of chewing his lips which bothered him considerably. Consequently, he decided to try to reduce this outer behavior and to record the number of times he thought about chewing his lips as well.

Configurations. Charts of the outer and inner behaviors for Case 9 have been exhibited in Figure 12. From these it appears that there was a decrement in the outer behavior of chewing the lips and an increment in the inner behavior of thinking about chewing the lips when these were compared to baseline frequencies.

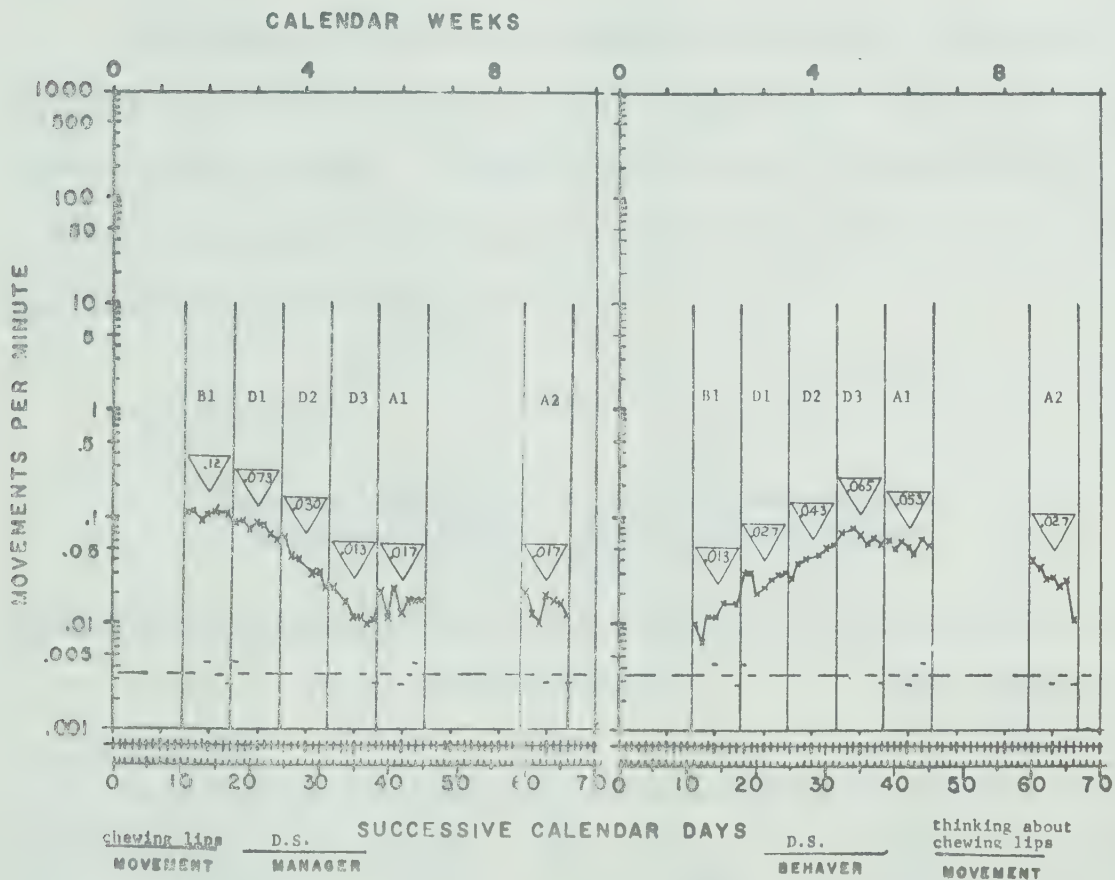


Figure 12

Outer and Inner Behaviors - Case 9

Findings. The Double Mood test was applied to the data in Case 9 to determine whether the observed decreases in the frequency of the outer behavior were significant. As may be observed from the results shown in Table 10, the estimated frequency shift between the Before and During 1 phases was not significant. However, all other frequency shifts for the outer behavior were significant beyond the .01 level.

As a means of discovering whether the observed increases in the frequency of the inner behavior were significant, the Double Mood test was again applied. An inspection of Table 10 reveals that the estimated frequency shifts between the Before phase and all other phases were significant beyond the .025 level.

Table 10

Summary, Double Mood Test of Significance of
Estimated Frequency Shifts Between Phases
(Outer and Inner Behaviors - Case 9)

Phases Compared	Outer Behavior			Inner Behavior		
	t	df	p	t	df	p
Before and During 1	1.23	10	N.S.	2.25	10	<.025
Before and During 2	4.55	7	<.005	7.10	7	<.0005
Before and During 3	7.15	8	<.0005	12.11	8	<.0005
Before and After 1	7.95	9	<.0005	6.97	9	<.0005
Before and After 2	8.11	9	<.0005	5.48	9	<.0005

Conclusion. For subject D.S. (Case 9) introduction of the intervention procedures eventually resulted in a decrease in the outer behavior of chewing the lips but an increase in the inner thoughts about chewing the lips was produced. Moreover, these shifts were maintained after intervention ceased.

Case 10

Behavior. The subject, P.T., found that when she was studying she continually chewed on the ends of her pens and pencils. She considered this to be an unbecoming habit and wanted to decrease it. Consequently, she defined her outer behavior as putting a pen or pencil into her mouth and her inner behavior as stopping the movement cycle before the pen or pencil entered her mouth.

Configurations. Charts of the outer and inner behaviors for Case 10 have been shown in Figure 13. As may be observed from these charts, both the outer behavior (putting pens and pencils into the mouth) and the inner behavior (stopping pens and pencils from entering mouth) seemed to decrease below baseline.

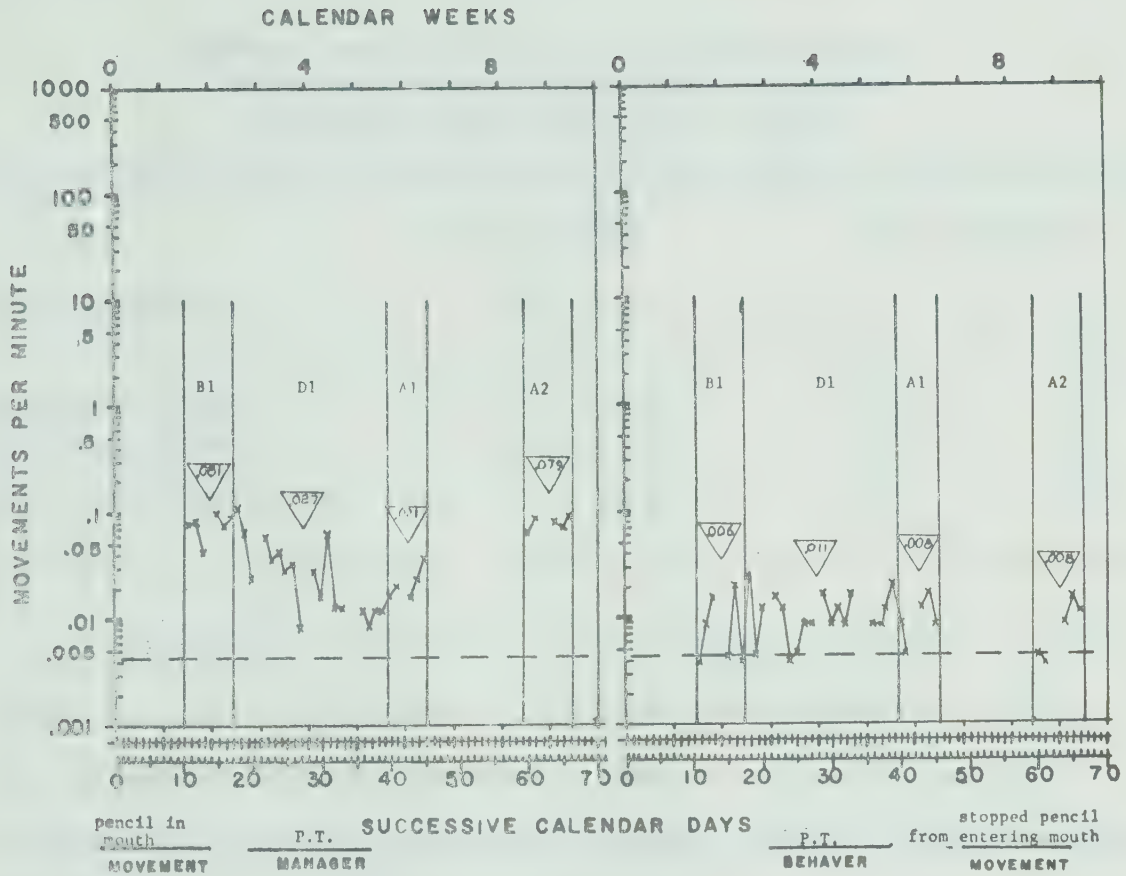


Figure 13

Outer and Inner Behaviors (Case 10)

Findings. In order to determine whether the observed decrease in the frequency of the outer behavior and the observed increase in the frequency of the inner behavior in Case 10 were significant, the Double Mood test was applied. An examination of the results presented in Table 11 reveals that the estimated frequency shift between the Before and After 1 phase for the outer behavior was significant beyond the .01 level. In all the other comparisons no significant differences were obtained.

Table 11

Summary, Double Mood Test of Significance of
Estimated Frequency Shifts Between Phases
(Outer and Inner Behaviors - Case 10)

Phases Compared	Outer Behavior			Inner Behavior		
	t	df	p	t	df	p
Before and During 1	0.73	20	N.S.	0.05	20	N.S.
Before and After 1	3.43	7	<.01	0.37	7	N.S.
Before and After 2	0.71	7	N.S.	1.36	7	N.S.

Conclusion. Introduction of the intervention procedure for the subject P.T. (Case 10) eventually decreased the frequency of putting her pens and pencils into her mouth. However, this shift was not maintained and the number of times she stopped herself from putting pens and pencils into her mouth did not change.

Case 11

Behavior. The subject, L.N., had twisted her ankles a number of times and the subsequent poor circulation had resulted in a blood clot below her knee. On medical advice she had previously attempted unsuccessfully to stop crossing her legs at her knees. In the present study she defined this as her outer behavior and pinpointed her inner behavior as thinking about crossing her legs at her knees.

Configurations. Charts of the outer and inner behaviors for Case 11 have been presented in Figure 14. Inspection of these charts reveals that both the outer and inner behaviors went below baseline

frequencies.

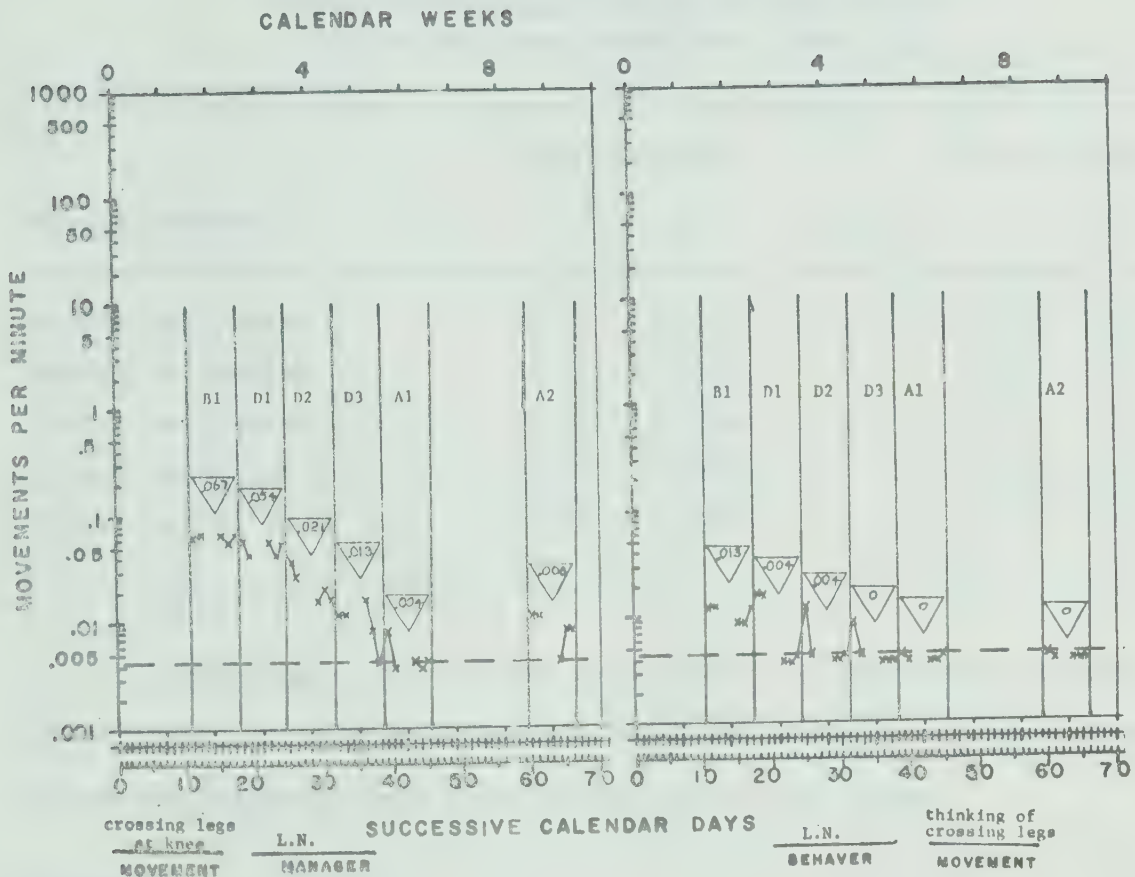


Figure 14

Outer and Inner Behaviors (Case 11)

Findings. To provide evidence that observed decreases in the frequencies of the outer and inner behaviors in Case 11 were significant, the Double Mood test was applied. As can be seen from Table 12, the estimated frequency shifts between the Before and During 1, 2 and 3 phases for the inner behavior were not significant. However, all other estimated frequency shifts were significant beyond the .025 level.

Table 12

Summary, Double Mood Test of Significance of
Estimated Frequency Shifts Between Phases
(Outer and Inner Behaviors - Case 11)

Phases Compared	Outer Behavior		Inner Behavior	
	t	p	t	p
Before and During 1	1.27	N.S.	1.32	N.S.
Before and During 2	4.57	<.005	0.09	N.S.
Before and During 3	9.07	<.0005	0.71	N.S.
Before and After 1	11.36	<.0005	2.45	<.025
Before and After 2	10.51	<.0005	2.57	<.025

df=6

Conclusion. For subject L.N. (Case 11) introduction of the intervention procedures ultimately decreased crossing her legs at her knees and thinking about crossing her legs at her knees.

Summary

Cases in which personal management techniques have been applied to a variety of behaviors have been presented. The target behaviors have been defined, the configurations have been shown and the findings and conclusions have been presented. Significant shifts in the frequency of the outer behavior were obtained in ten of the eleven cases. In some instances, there was no change in the frequency of the inner behavior while in others the inner behavior changed in either the same direction or in the opposite direction to that of the outer behavior.

CHAPTER V

DISCUSSION AND IMPLICATIONS

I. DISCUSSION

Discussion of Results

Although the results of the present investigation have been presented as individual cases, several topics for general discussion have emerged.

As can be noted from the results reported in Chapter IV, target behaviors varied considerably among subjects. Thus, reported pinpoints for outer behaviors included smiling at strangers, swearing, biting nails, and chewing lips. Other pinpoints consisted of food bites and angry outbursts. The significance of these pinpoints may be strongly questioned. However, since this investigation was a study in self-management, these pinpoints were individually chosen and must be considered to be personally significant. This is exemplified in Case 11 where the subject tried to decelerate the behavior of crossing her legs at the knee for medical reasons.

Another point to be noted about the results is that in all cases except one, deceleration targets were chosen. This was unexpected in that examples of both acceleration and deceleration targets had been given during the training procedure. In addition, intervention procedures usually consisted of changes in the arrangement or arranged event even though behaviors such as nail biting and food bites readily lend themselves to changes in program events. In only one

case, when aluminum foil was placed on the ends of pens and pencils was a program event introduced.

The ease with which subjects were able to identify the occurrence of inner behaviors is also open to question. In some instances as in Case 3, introduction of the intervention procedures produced less overt swearing but more covert swearing leading one to the conclusion that the inner and outer behaviors were distinguishable. However, in Case 1 where the frequencies for smiling at strangers and urges to smile at strangers were almost identical, the subject may not have been able to distinguish between the inner and outer behaviors. In another case, the subject made the outer and inner behaviors mutually exclusive by identifying the inner behavior in the form of an outer. Thus, in Case 10 the urge to place the end of a pen or pencil in the mouth was identified by stopping the outer behavior of putting it in.

In several cases intervention procedures were applied in which receipt of an arranged event was contingent upon resisting inner urges. Accordingly, in Cases 4, 5 and 7 increases in the inner behavior would be anticipated. However, this did not occur but instead the frequencies of the inner behavior either decreased or did not change significantly.

From studies conducted on inner behaviors, Duncan (1971a) has suggested that it is best to count these behaviors all day in order to obtain sufficiently high frequencies. However, in some cases in the current study very low frequencies such as 16 behaviors in 1000 minutes have been reported. Higher frequencies could be obtained by determining

the conditions under which the behavior usually occurs and restricting counting to those times.

One very basic problem associated with the present investigation is that the reliability of the reported frequencies may be strongly questioned. Where possible, Simkins (1971a, 1971b) and Nelson and Mc Reynolds (1971) have suggested that reliability estimates be obtained from other sources such as a spouse or friend or by using automatic recording devices. Although subjects were usually recording behaviors in a variety of settings, it is apparent that some estimate of the reliability of the outer behaviors would be desirable even if such measures were obtained under restricted conditions. Methods of obtaining reliability estimates for inner behaviors await technological developments.

Studies in personal management have usually been characterized by self-monitoring. However, according to Kanfer (1970) and Johnson and White (1971) such procedures may be reactive confounding treatment effects. In the present investigation attempts were made to reduce the effects of self-monitoring to a minimum by having subjects count their behaviors for one week before the study as well as in the baseline period.

Discussion of the Training Program

A review of the training and treatment procedures reveals that several important changes in the training program could be made. Because time allotted for training in Precise Behavioral Management techniques was very limited, in-class discussion of this technique and of personal behavior projects was extremely restricted. Thus, more

time for discussion of these topics as well as for consideration of the relationship between operant theory and Precise Behavioral Management techniques would be desirable.

Some means of monitoring each subject more closely would also be advisable. This could be accomplished through more group discussion of individual projects or by having subjects hand in data and plans on a weekly basis.

II. IMPLICATIONS

Implications for Research

Since very little work in personal behavior management has been conducted, numerous possibilities for further research in this area exist.

As outlined by Johnson and White (1971), studies to determine the effects of self-monitoring need to be conducted. As an example, it may be that self-observation is relevant in affecting incompatible behaviors such as dating and study or that individuals can generalize self-observation from one activity to another.

Better methods of establishing reliabilities in self-management such as with automatic recording devices also need to be developed. Eventually, it may be possible physiologically to define and record inner behaviors.

Other studies on the self-management of outer behaviors could be conducted in controlled settings such as in the classroom where better reliability estimates may be determined.

Finally, more work on applying personal management procedures

to accelerating desirable behaviors needs to be conducted. Studies in accelerating a desirable behavior while decelerating an undesirable behavior might also be carried out.

Implications for Education

According to Lovitt (1970), one aim of education is to eventually enable students to manage their own behaviors. Thus, the present investigation would seem to have numerous implications for this area.

While various studies reported in the literature have established the efficacy of applying operant principles to subjects of below average intelligence, few studies have been conducted in which these principles have been used with adults of average or above average intelligence. Personal behavior management as outlined in the current study would appear to have wide applicability within this population.

This technique might also be employed in the training of teachers and counsellors where certain personal behaviors appear to be desirable. By pinpointing these behaviors, students could apply personal management techniques in helping them reach their goals.

Within the school system itself, counsellors and teachers often spend considerable time meeting with groups of students to discuss personal problems they are encountering. One further application of personal management might involve teaching these procedures to groups of junior and high school students and helping them conduct change programs.

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A P P E N D I C E S

A P P E N D I X A

READING ASSIGNMENTS AND MAJOR PRINCIPLES OF OPERANT CONDITIONING

Reading Assignments

Pitts, C.E. Introduction to educational psychology: An operant approach. 1971.

Case studies (2 per week)

An overview of the history of operant conditioning from Skinner to the present day.

Major Principles of Operant Conditioning

Stimulus Control

Positive Reinforcement

Negative Reinforcement

Punishment

Extinction

Time and Scheduling of Reinforcement

Premack's Principle

Discrimination

Generalization

Shaping

Differential Treatment

A P P E N D I X B

ORDER OF TOPICS PRESENTED ON PRECISE BEHAVIORAL MANAGEMENT

Order of Topics Presented on Precise Behavioral Management

Session 1

pinpointing
defining and counting movement cycles
calibration
accuracy pairs
impulse pairs
types of counters
recording of data

Session 2

calculating frequencies
middle frequencies
charting
rated days, ignored days and no chance days
record floor
zero frequencies

Session 3

phases
planning using the Is Description and Planning Sheet
program
arranged events
program events
arrangements

Session 4

phase change lines
performance aim

A P P E N D I X C

RECORDING SHEET

RECORDING SHEET

Name: _____

Pinpoint: _____

[illegible]

A P P E N D I X D

PRACTICE EXERCISE ON CALCULATING FREQUENCIES AND ON CHARTING

Practice Exercise on Calculating Frequencies and on Charting

Calculate the frequencies of each of the following:

Date	Number of Movement Cycles Counted	Starting Time	Stopping Time	Total Minutes of Counting	Frequency $\frac{\text{Movement Cycles}}{\text{Total Minutes}}$
	45	9:00 a.m.	9:15 a.m.		
	120	9:00 a.m.	10:00 a.m.		
	36	8:00 a.m.	11:00 a.m.		
	36	8:00 a.m.	2:00 p.m.		
	40	8:00 a.m.	9:20 p.m.		
	48	7:30 a.m.	8:50 p.m.		

Chart each of the following on the Daily Behavior Chart:

- 3 movements/minute on the first Monday.
- 4 movements/minute on the first Tuesday.
- 6 movements/minute on the first Wednesday.
- 11 movements/minute on the first Thursday.
- 70 movements/minute on the second Tuesday.
- 65 movements/minute on the second Wednesday.
- .3 movements/minute on Friday of the fourth week.
- .5 movements/minute on Saturday of the fourth week.
- .02 movements/minute on Sunday of the fifth week.
- .04 movements/minute on Monday of the fifth week.
- .009 movements/minute on Monday of the sixth week.
- .005 movements/minute on Tuesday of the sixth week.

A P P E N D I X E

PRACTICE EXERCISE ON CALCULATING THE RECORD FLOOR

Practice Exercise on Calculating the Record Floor

Find the RECORD FLOOR in each of the following cases and show them on a Daily Behavior Chart.

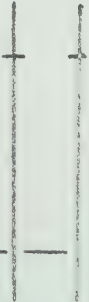
Total Minutes of Counting	Record Floor
10	
200	
500	
800	
20	
5	
250	

A P P E N D I X F

BEHAVIOR CHARTING CONVENTIONS

(Haughton, 1969)

BEHAVIOR CHARTING CONVENTIONS

Term	Definition	Charting Conventions
RATED DAY	A day in which the movement could have occurred and was recorded.	1. Chart point on daily chart. 2. Connect points with lines, skip all no chance and phase change space. Chart in pencil only, no colors. Use dot for acceleration target (e.g.,  and x's for deceleration target (e.g., ) <u>Each movement cycle on a separate chart.</u>
NO CHANCE DAY	A day in which the movement has no opportunity to occur.	Skip day on daily chart.
IGNORED DAY	A day in which the movement could have occurred but was not recorded.	Draw line across day on daily chart.
PHASE CHANGE SPACE	The space following the last rated day of one phase and the first day of the next phase.	Draw a vertical line on the chart in the phase change space. Don't connect data points.
RECORD CEILING	The highest measurable performance frequency, determined by the program or program events.	Draw dashed horizontal lines on the chart at the maximum frequency. Dashes should occur across Sunday lines e.g. 
RECORD FLOOR	The lowest measurable performance frequency, other than zero, determined by the length of time sample (i.e., $1/\text{time sample} = \text{record floor}$).	Draw a horizontal dashed line on the chart at the record floor. Dashes should occur across week day lines. 
MIDDLE ACCELERATION FREQUENCY	Mid-point of rated days in each phase.	 tail of tear drop points at mid-point (middle), number inside tear drop.
MIDDLE DECELERATION FREQUENCY	Mid-point of rated days in each phase.	 tail of triangle apex points at mid-point (middle) number inside triangle.
ZERO RATE	No movement cycle recorded within <u>the time sample</u> .	Chart point directly below record floor.

A P P E N D I X G

COMPONENTS OF THE IS PLAN

COMPONENTS OF THE IS PLAN

Program	Program Event	Movement Cycle	Arrangement	Arranged Event
The general environmental setting in which the movement cycle is of concern. It usually includes such things as the time of day, length of recording sample, and location. In a school setting, it might include the room, seating arrangement, subject taught, and teacher. The program usually consists of any variables which remain constant for the time period over which the occurrence of the movement cycle is counted and recorded.	Any event which occurs whether or not the movement cycle occurs. It usually occurs before the movement cycle. Examples: reading material or other materials used during instruction (television, films, etc.), the nature of verbal interaction, or the behavior of a peer.	A behavior which is (1) observable, (2) countable, (3) has a beginning and end, and can be repeated. (e.g. suicide is a behavior which can only be emitted once by any one person and therefore is not a movement cycle. Examples of outer behaviors which are movement cycles are positive statements, compliments given to others, greetings, initiates conversation, helps others, laughs at self, expresses affection, gossips, brags, criticisms. Count outer behaviors at the end of each cycle. Examples of inner behaviors which are movement cycles are happy thoughts, sad thoughts, positive thoughts, thinks of help-others, feels good, feels like showing affections, thinks of someone, angry feelings, cigarette urges, food urges. Count inner behaviors when they first occur.	The relationship between the number of times the movement cycle occurs and the number of times it is followed by an arranged event. The convention for representing the arrangement is to indicate the number of movement cycles, then place a colon (:) after that number and then indicate the number of arranged events that would occur following that number of movement cycles. Examples: 1:1 (for every movement cycle emitted, one arranged event occurs); 10:1 (for every 10 movement cycles emitted, one arranged event occurs); 2:5 (for every 2 minutes the movement cycle occurs, 5 arranged events occur. Quite often an appropriate arranged event may not affect the movement cycle because the arrangement is inappropriate.	Environmental events which occur just following the movement cycle and which only occur if the movement cycle occurs. Example of arranged events which may have an effect upon the behavior are praise, grades, attention, money, activities, free time, token
DISPOSITION	STIMULUS	RESPONSE	CONTINGENCY	CONSEQUENCE

A P P E N D I X H

CHARTING PROJECT CHECKLIST

(Starlin, 1970)

Charting Project ChecklistProjects

1. All performance measures are in terms of frequency (i.e., movements/minute).
2. Daily records have been entered daily on the recording sheet.
3. Frequencies have been plotted on the behavior chart.
4. Charts are being kept daily.
5. Since there is a frequency of outer and inner movements both outer and inner should be charted and on separate charts.
6. Have indicated record floor.
7. Have indicated performance aim for outer.
8. Have indicated record ceiling if there is one.
9. Have distinguished between ignored and no chance days.
10. Have an Is Planning and Description Sheet for each movement cycle.
11. Have executed and indicated phases - Before
 - During 1
 - During 2
 - During 3
 - After 1
 - After 2
12. Have identified intervention procedures in each phase on the chart.
13. Have indicated middle frequencies for each phase.
14. Have calendar synchronized charts and entered Sunday dates. (first Monday - January 10, 1972).
15. Have followed all charting conventions (see handout).

A P P E N D I X I

IS PLANS FOR EACH CASE

IS DESCRIPTION AND PLANNING SHEET (CASE 1) Date Jan. 20 - March 15,
1972.

Supervisor _____ Advisor _____ E.A. Manager _____ E.A. Behavior _____ Edmonton Location _____

ACCELERATION						DECELERATION				
Name	Pro-gram (P)	Program Event (PE)	Movement Cycle (MC)	Arran-gement (A)	Arranged Event (AE)	P	PE	MC	A	AE
Before	8 a.m. - 3:30 p.m. on bus and at school	I encounter someone who is not known to me and our eyes meet	smiling at strangers	none identified	none identified					
During 1	same	same	same	2:1	I give myself 5¢					
During 2	same	same	same	4:1	same					
During 3	same	same	same	10:1	same					
After 1	same	same	same	none identified	none identified					
After 2	same	same	same	same	same					

Date Jan. 20 - March 15, 1972

IS DESCRIPTION AND PLANNING SHEET (CASE 2)

Edmonton
Location

J.C.
Behavior

J.C.
Manager

Advisor

Supervisor

DECELERATION

ACCELERATION

Name	Program (P)	Program Event (PE)	Movement Cycle (MC)	Arran- gement (A)	Arranged Event (AE)	P	PE	MC	A	AE
Before						12 hours	none identified	biting nails on cuticles	none identified	none identified
During 1						same	same	same	each MC < 189 :1	1c towards buying silver puzzle ring
During 2						same	same	same	each MC < 160 :1	1/2c towards buying silver puzzle ring
During 3						same	same	same	each MC < 130 :1	same
After 1						same	same	same	none ident- ified	none identified
After 2						same	same	same	same	same

IS DESCRIPTION AND PLANNING SHEET (CASE 3)

Date Jan. 20 - March 15, 1972

Supervisor _____ D.C. _____ D.C. _____ Edmonton _____
 Advisor _____ Manager _____ Behavior _____ Location _____

ACCELERATION					DECELERATION					
Name	Pro-gram (P)	Program Event (PE)	Movement Cycle (MC)	Arran-gement (A)	Arranged Event (AE)	P	PE	MC	A	AE
Before						12 hours	none identified	swearing out counted using tallies	none identified	none identified
During 1						same	same	same	each MC < 23 : 1	5¢ towards book
During 2						same	same	same	each MC < 17 : 1	3¢ towards book
During 3						same	same	same	each MC < 10 : 1	2¢ towards book
After 1						same	same	same	none identified	none identified
After 2						same	same	same	same	same

IS DESCRIPTION AND PLANNING SHEET (CASE 4)

Date Jan. 20 - March 15,
1972

Supervisor _____ M.J.C. Manager _____ M.J.C. Behavior _____ Location _____
Edmonton

ACCELERATION

Name	Program (P)	Program Event (PE)	Movement Cycle (MC)	Arrangement (A)	Arranged Event (AE)	P	PE	MC	A	AE
Before						8:00 a.m. - 11:00 p.m.	felt upset, aggravated or annoyed	swearing continued using tallies	none identified	none identified
During 1						same	same	same	0 profanity per urge	lc towards buying a new outfit
During 2						same	same	same	0 profanity per 2 urges	same
After 1						same	same	same	none identified	none identified
After 2						same	same	same	same	same

DECELERATION

Date Jan. 20 - March 15, 1972

IS DESCRIPTION AND PLANNING SHEET (CASE 5)

Supervisor L.F. Manager L.F. Behavior Location

ACCELERATION

DECELERATION

Name	Program (P)	Program Event (PE)	Movement Cycle (MC)	Arrangement (A)	Arranged Event (AE)	P	PE	MC	A	AE
Before						12 hours	an action or verbal comment by contacts - especially husband - giving directions or orders	angry outbursts (yells hollars) counted us-identified	none identified	
During 1						same	same	same	0 outbursts per hour	10c
During 2						same	same	same	0 outbursts per hour	25c
During 3						same	same	same	0 outbursts per hour	No free nights when behavior increased or remained the same
After 1						same	same	same	0 outbursts in 4 hours	\$1.00
After 2						same	same	same	none identified	same

Date Jan. 20 - March 15,
1972

IS DESCRIPTION AND PLANNING SHEET (CASE 6)

Supervisor _____ M.J.G. _____ M.J.G. _____ Edmontan _____
Advisor _____ Manager _____ Behavior _____ Location _____

ACCELERATION					DECELERATION					
Name	Pro-gram (P)	Program Event (PE)	Movement Cycle (MC)	Arran-gement (A)	Arranged Event (AE)	P	PE	MC	A	AE
Before						7:30 a.m. - 11:00 p.m.	impulse to rub eyes or skin	rubbing eyes or scratching skin	none identified	none identified
During 1						same	same	same	1:1	add points below .01, value .41 point to buy record
After 1						same	same	same	none identified	none identified
After 2						same	same	same	same	same

IS DESCRIPTION AND PLANNING SHEET (CASE 7) Date Jan. 20 - March 15, 1972

Supervisor _____ Advisor _____ D.M. Manager _____ D.M. Behavior _____ Edmonton Location _____

ACCELERATION					DECELERATION					
Name	Program (P)	Program Event (PE)	Movement Cycle (MC)	Arrangement (A)	Arranged Event (AE)	P	PE	MC	A	AE
Before						12 hours per day	none identified	snacks between meals	none identified	none identified
During 1						same	same	same	snacks to every 5 hours	money - 25c towards a new spring coat
After 1						same	same	same	none identified	none identified
After 2						same	same	same	same	same

IS DESCRIPTION AND PLANNING SHEET (CASE 8)

Date Jan. 20 - March 15,
1972

Supervisor _____ Advisor _____ E.N. Manager _____ E.M. Behavior _____ Edmonton Location _____

ACCELERATION

DECELERATION

Name	Pro-gram (P)	Program Event (PE)	Movement Cycle (MC)	Arrangement (A)	Arranged Event (AE)	P	PE	MC	A	AE
Before						12 hours	none identified	food bites counted using tallies	none identified	none identified
During 1						same	same	same	< 140 : 1 > 140 : 1	gain 5c lose 5c
During 2						same	same	same	< 130 : 1 > 130 : 1	same
During 3						same	same	same	< 125 : 1 > 125 : 1	same
After 1						same	same	same	none identified	none identified
After 2						same	same	same	same	same

IS DESCRIPTION AND PLANNING SHEET (CASE 9) **Date** Jan. 20 - March 15, 1972

Supervisor _____ Advisor _____ D.S. Manager _____ D.S. Behavior _____ Edmonton Location _____

ACCELERATION						DECELERATION					
Name	Program (P)	Program Event (PE)	Movement Cycle (MC)	Arrangement (A)	Arranged Event (AE)	P	PE	MC	A	AE	
Before						5 hours	none identified	chewing lips counted using tallies	none identified	none identified	
During 1						same	same	same	each MC < 25 :1	1 beer	
During 2						same	same	same	each MC < 15 :1	1 extra coffee per coffee break	
During 3						same	same	same	each MC < 8 :1	self-praise and personal satisfaction	
After 1						same	same	same	none identified	none identified	
After 2						same	same	same	same	same	

IS DESCRIPTION AND PLANNING SHEET (CASE 10)

Date Jan. 20 - March 15,
1972

Supervisor _____ Advisor _____ P.I. _____ Manager _____ P.T. _____ Behavior _____ Edmonton _____ Location _____

ACCELERATION

DECELERATION

Name	Pro-gram (P)	Program Event (PE)	Movement Cycle (MC)	Arran-gement (A)	Arranged Event (AE)	P	PE	MC	A	AE
Before										
During 1						4 hours presence of study, pen or pencil ing	presence of pen or pencil	putting pen or pencil into my mouth	none identified	none identified
After 1						same	same and placed aluminium foil on end of pens and pencils	same	1:1	discomfort caused by aluminium foil in mouth
After 2						same	presence of pen or pencil	same	none identified	none identified
						same	same	same	same	same

IS DESCRIPTION AND PLANNING SHEET (CASE 11)

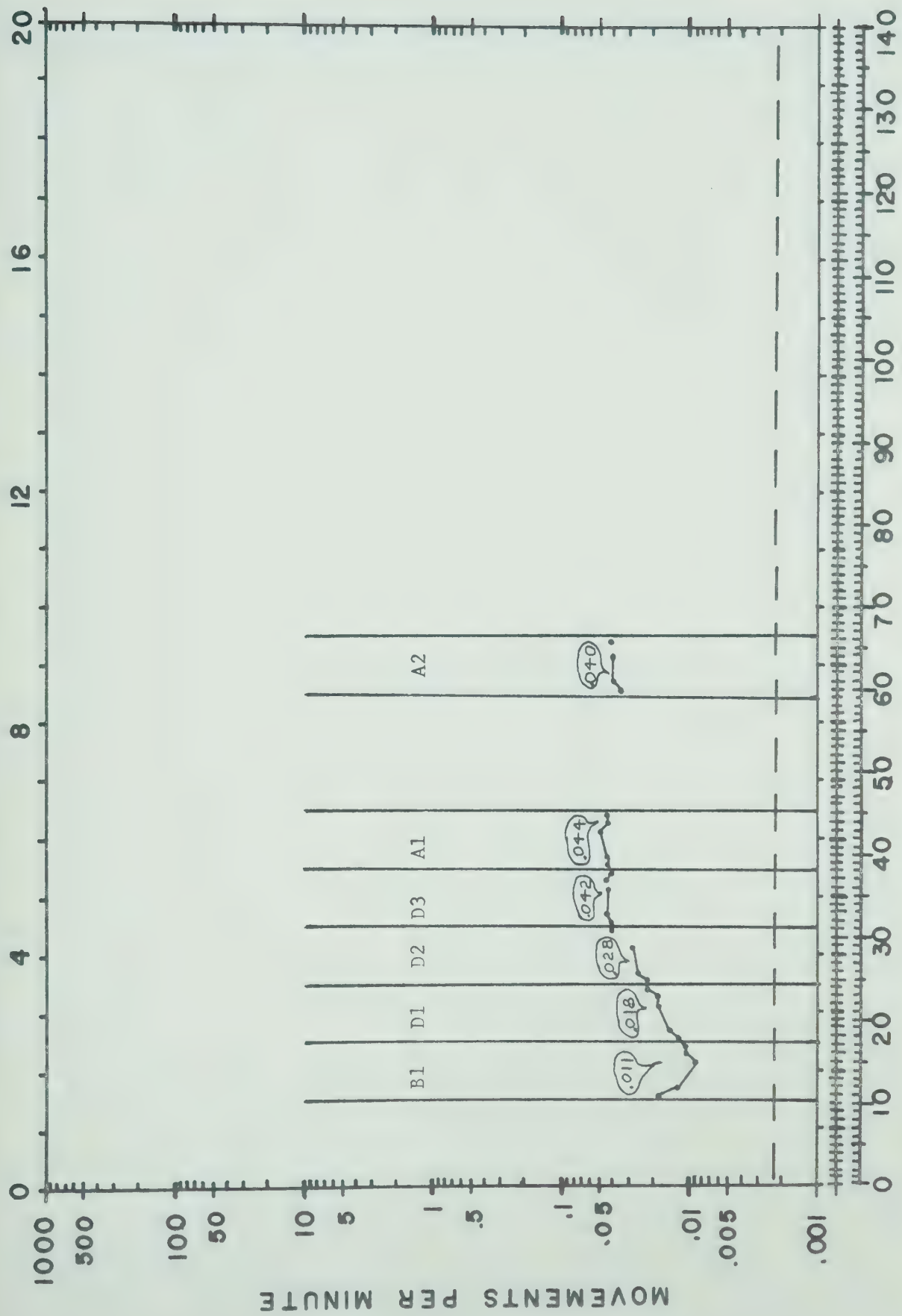
Date Jan. 20 - March 15,
1972

Supervisor _____ Adviser _____ L.N. Manager _____ L.N. Behavior _____ Edmonton Location _____

ACCELERATION					DECELERATION					
Name	Pro-gram (P)	Program Event (PE)	Movement Cycle (MC)	Arrangement (A)	Arranged Event (AE)	P	PE	MC	A	AE
Before						8 - 12 P.M. In Class-room at desk	teacher lecturing	crossing legs at knee	none identified	none identified
During 1						same	same and set performance aim of < 10 knee crossing	same	same	same
During 2						same	teacher lecturing	same	< 10 : 1	one-half hour free time
During 3						same	same	same	< 5 : 1	one hour free time
After 1						same	same	same	none identified	none identified
After 2						same	same	same	same	same

A P P E N D I X J

DAILY BEHAVIOR CHARTS FOR EACH CASE



SUCCESSIVE CALENDAR DAYS

E.A.

CASE 1

MANAGER

ADVISER

SUPERVISOR

E.A.

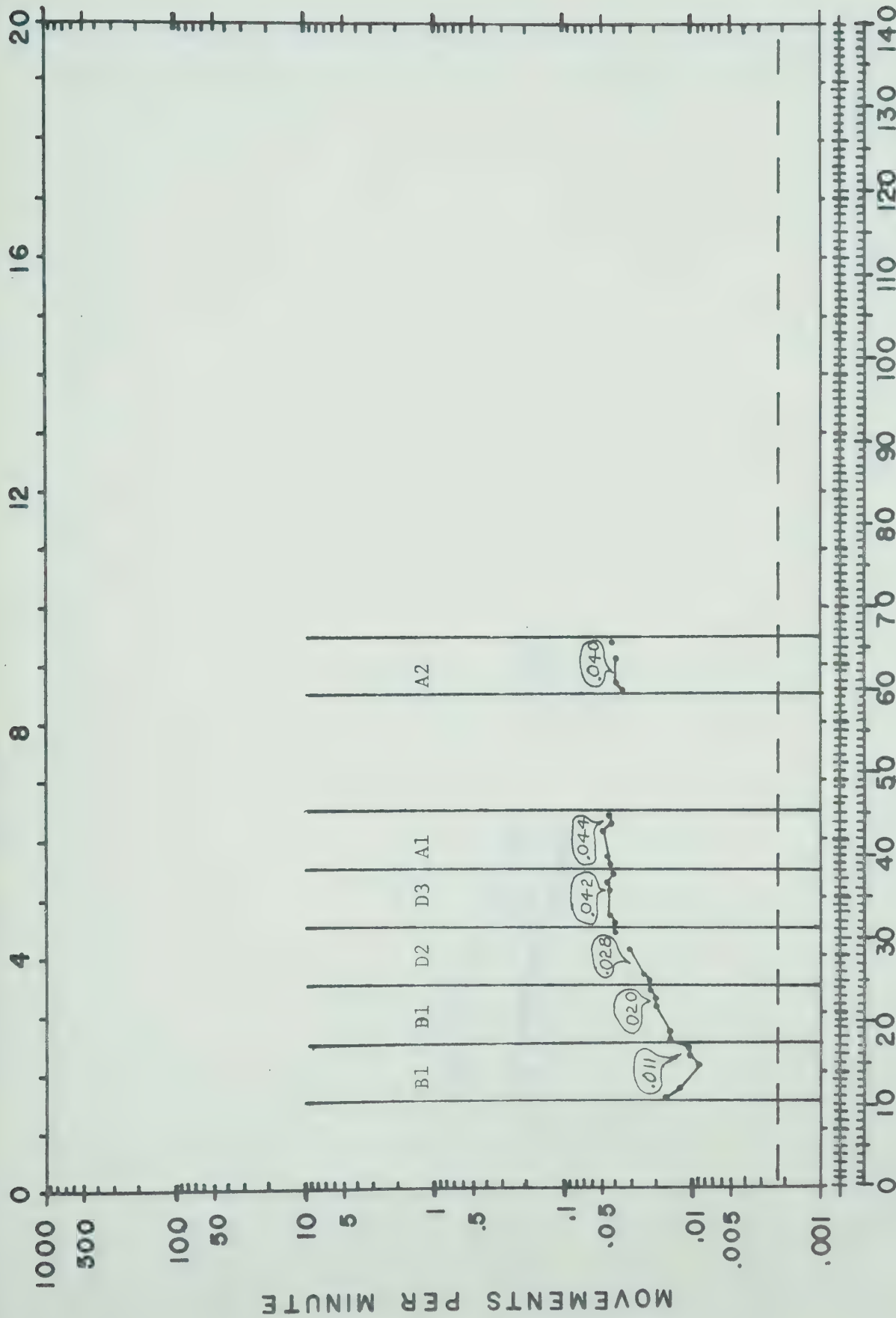
BEHAVIOR

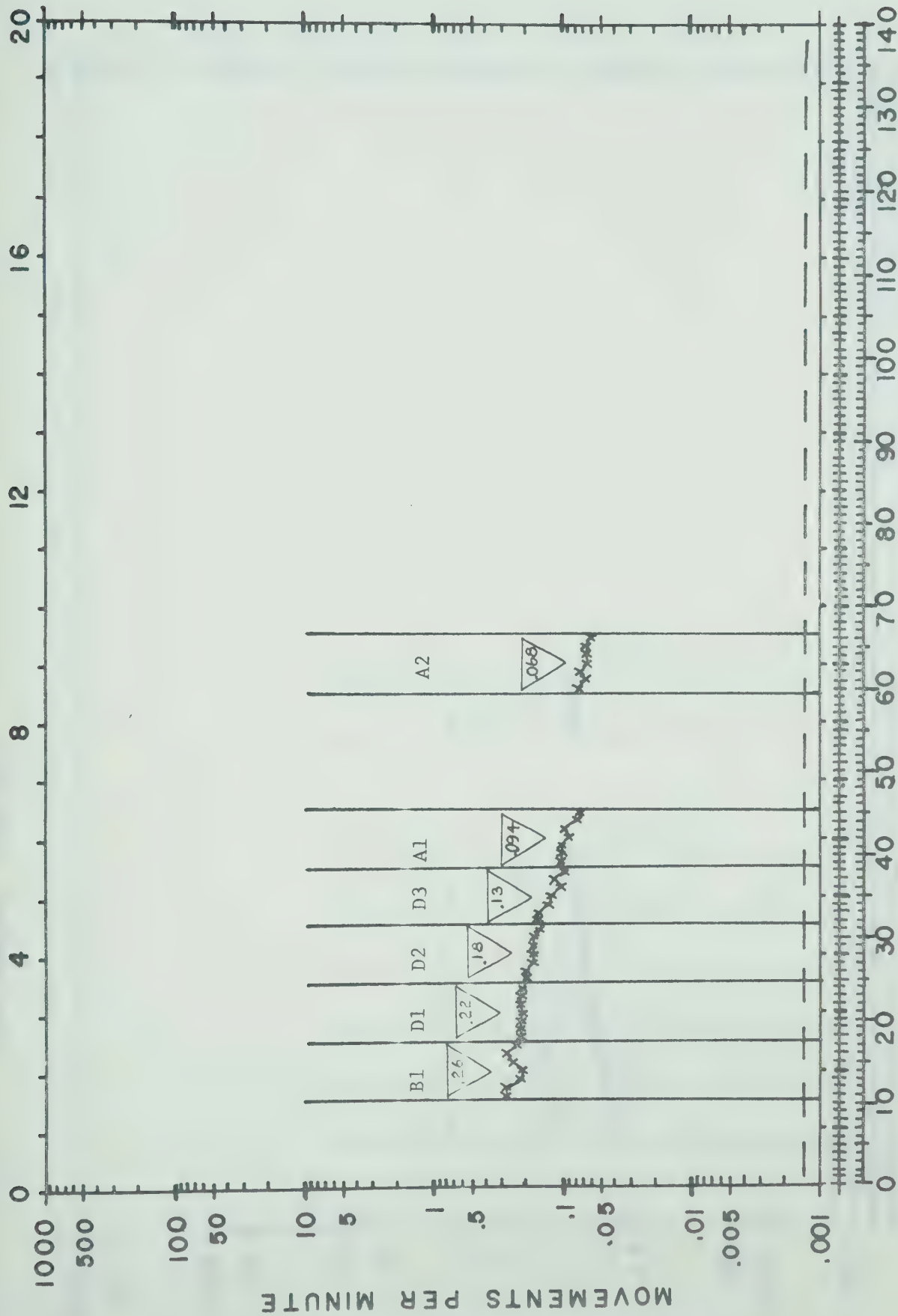
AGE

LABEL

MOVEMENT

smiling at
strangers





SUCCESSIVE CALENDAR DAYS

J.C.

SUPERVISOR

ADVISER

MANAGER

CASE 2

J.C.

BEHAVIOR

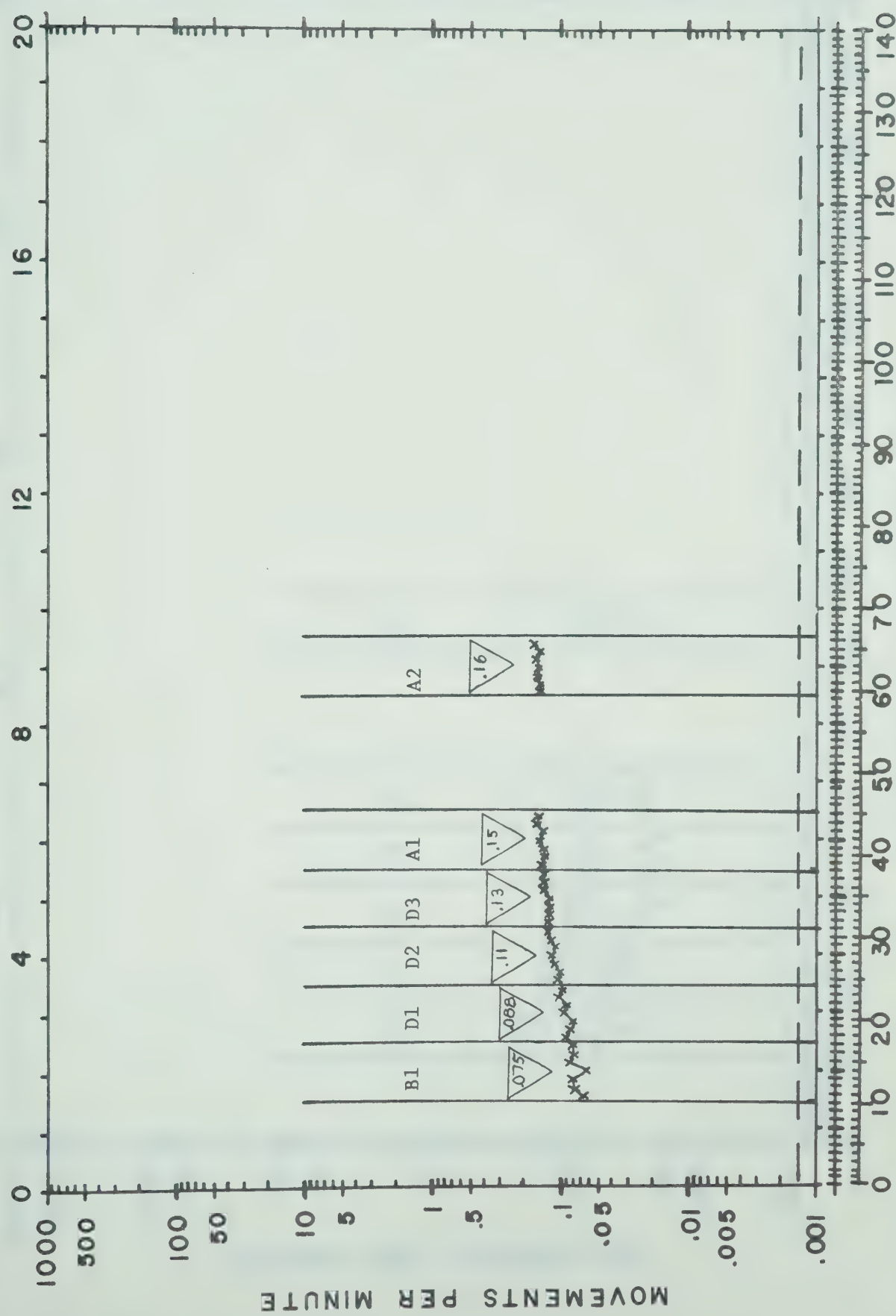
AGE

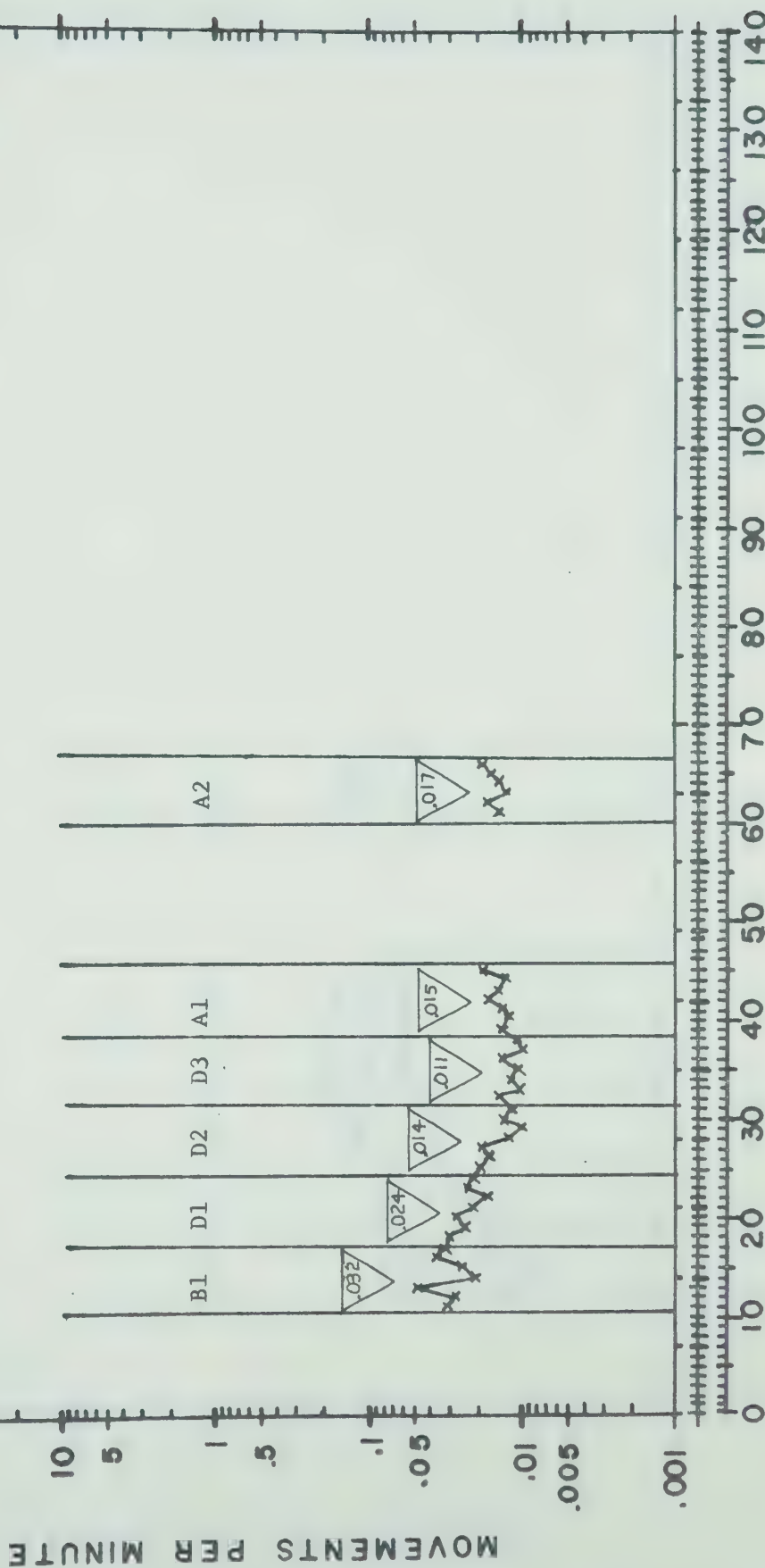
LABEL

MOVEMENT

biting nail
or cuticles

CALENDAR WEEKS





SUCCESSIVE CALENDAR DAYS

CASE 3

D.C.

ADVISER

MANAGER

D.C.

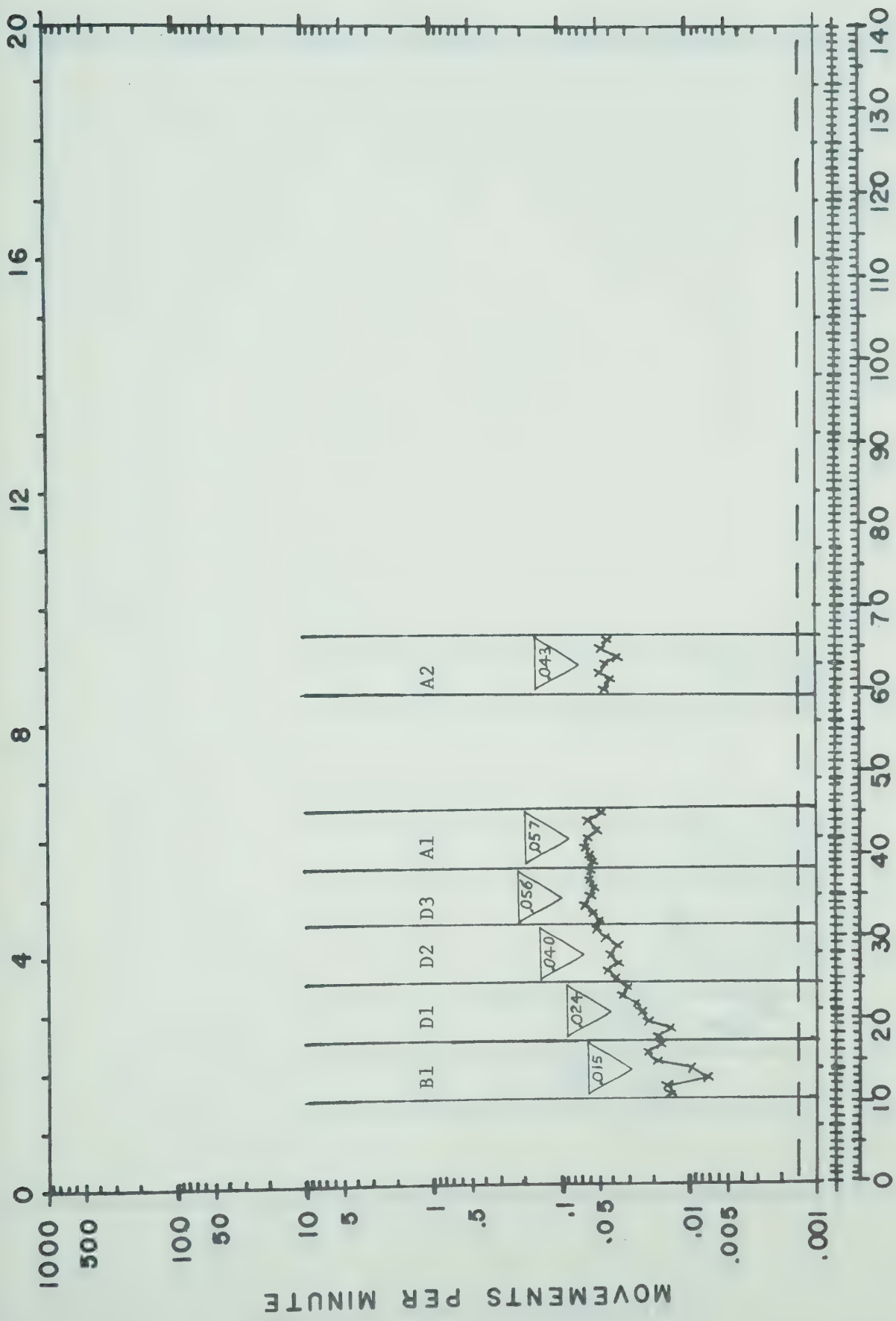
BEHAVIOR

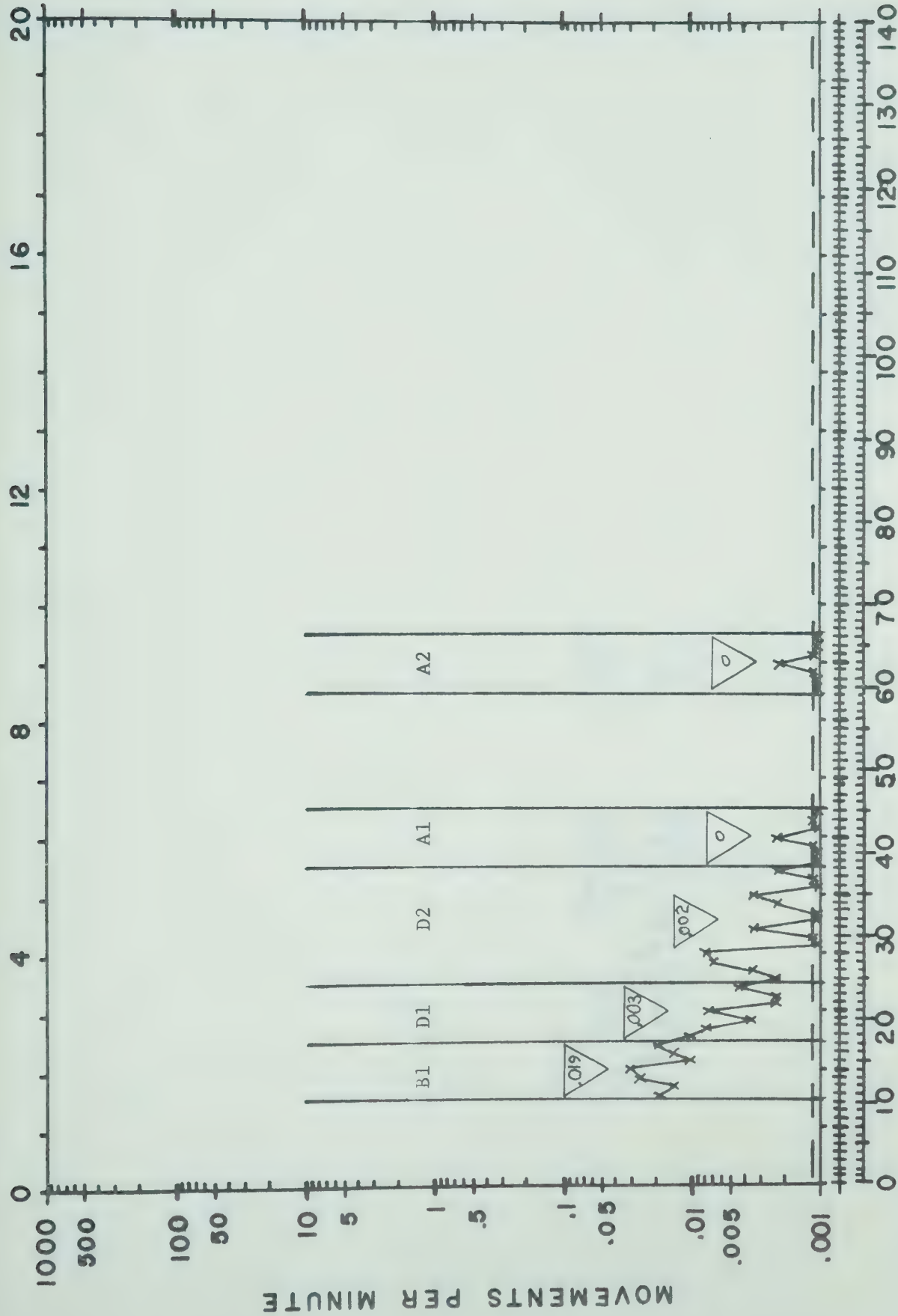
AGE

LABEL

MOVEMENT

swearing

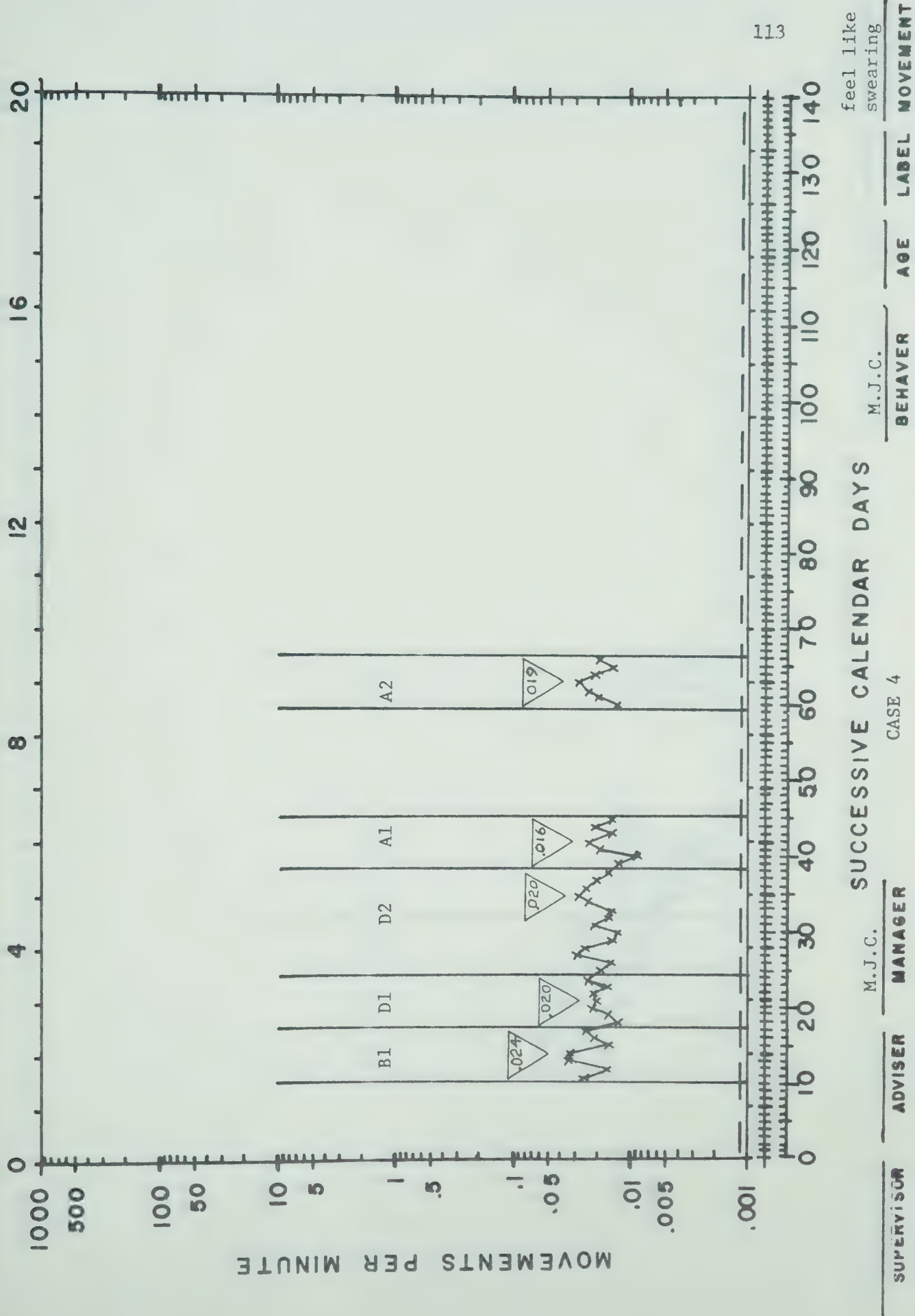


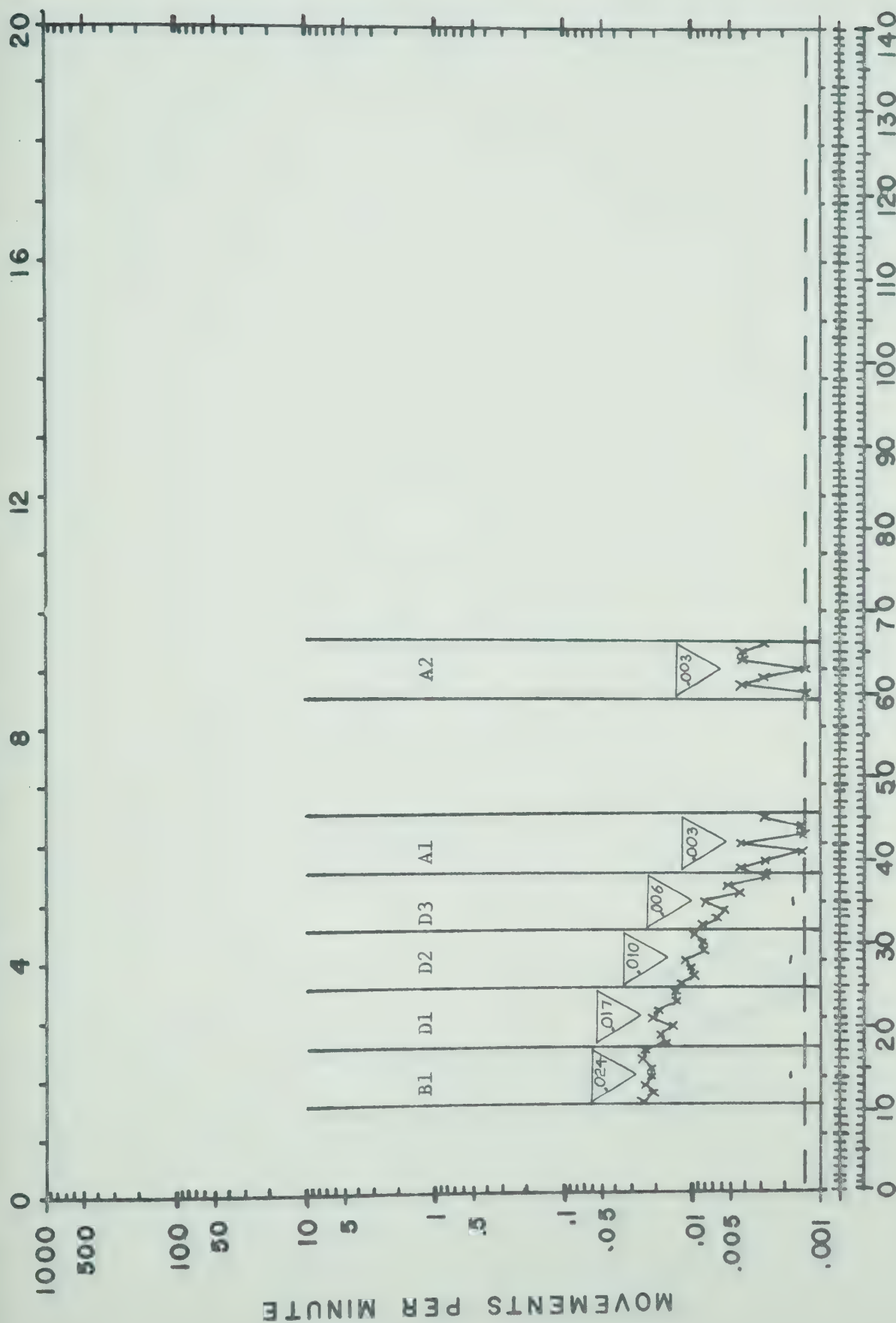


SUCCESSIVE CALENDAR DAYS

CASE 4

SUPERVISOR	ADVISER	M.J.C.		AGE	LABEL	MOVEMENT
		BEHAVIOR	swearing			





SUCCESSIVE CALENDAR DAYS

CASE 5

MANAGER

ADVISER

SUPERVISOR

L.F.

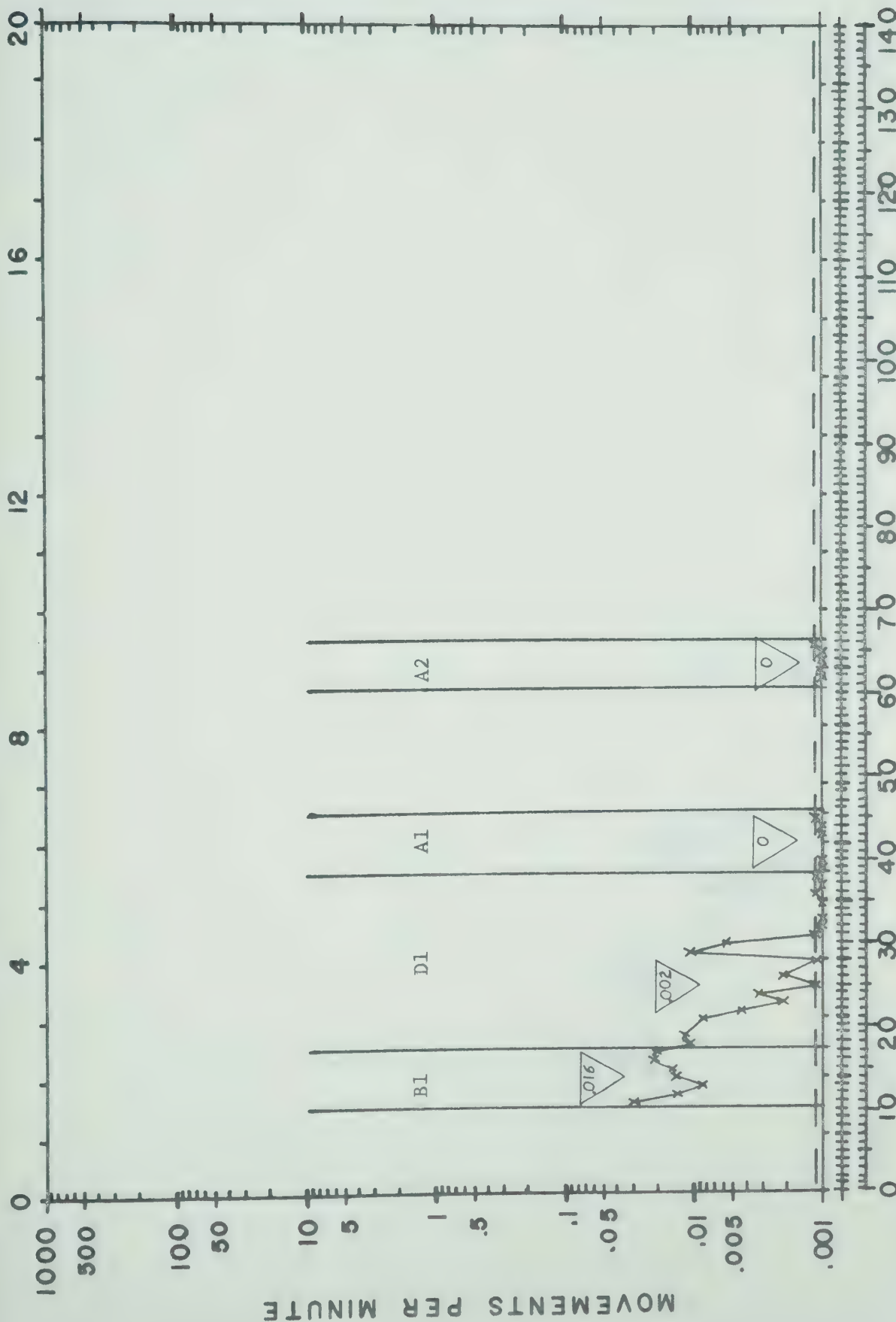
BEHAVIOR

AGE

LABEL

MOVEMENT

CALENDAR WEEKS



SUCCESSIVE CALENDAR DAYS

M.J.G.

MANAGER

M.J.G.

BEHAVIOR

AGE

LABEL

rubbing eyes

MOVEMENT

Case 6

SUPERVISOR

ADVISER

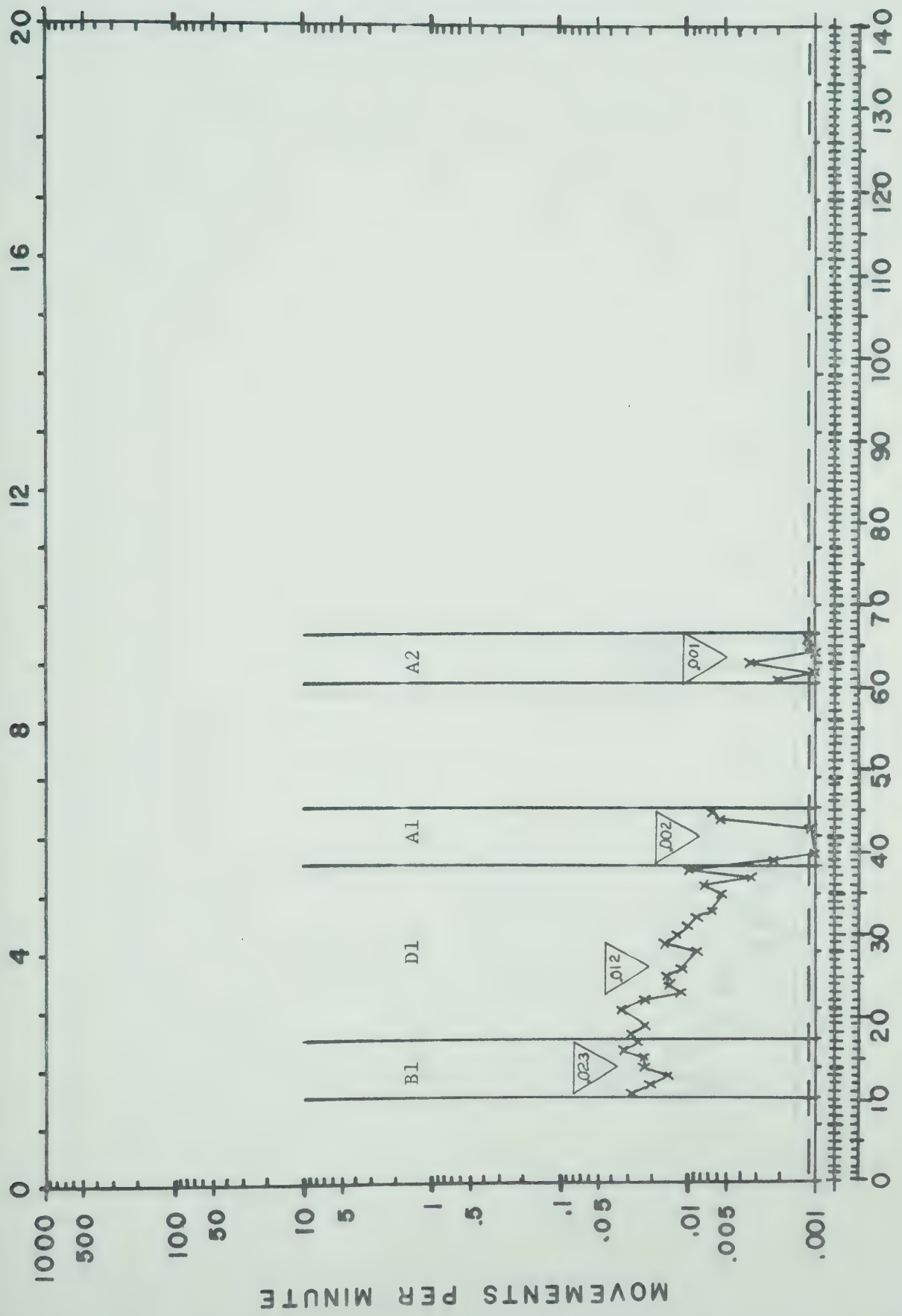
MANAGER

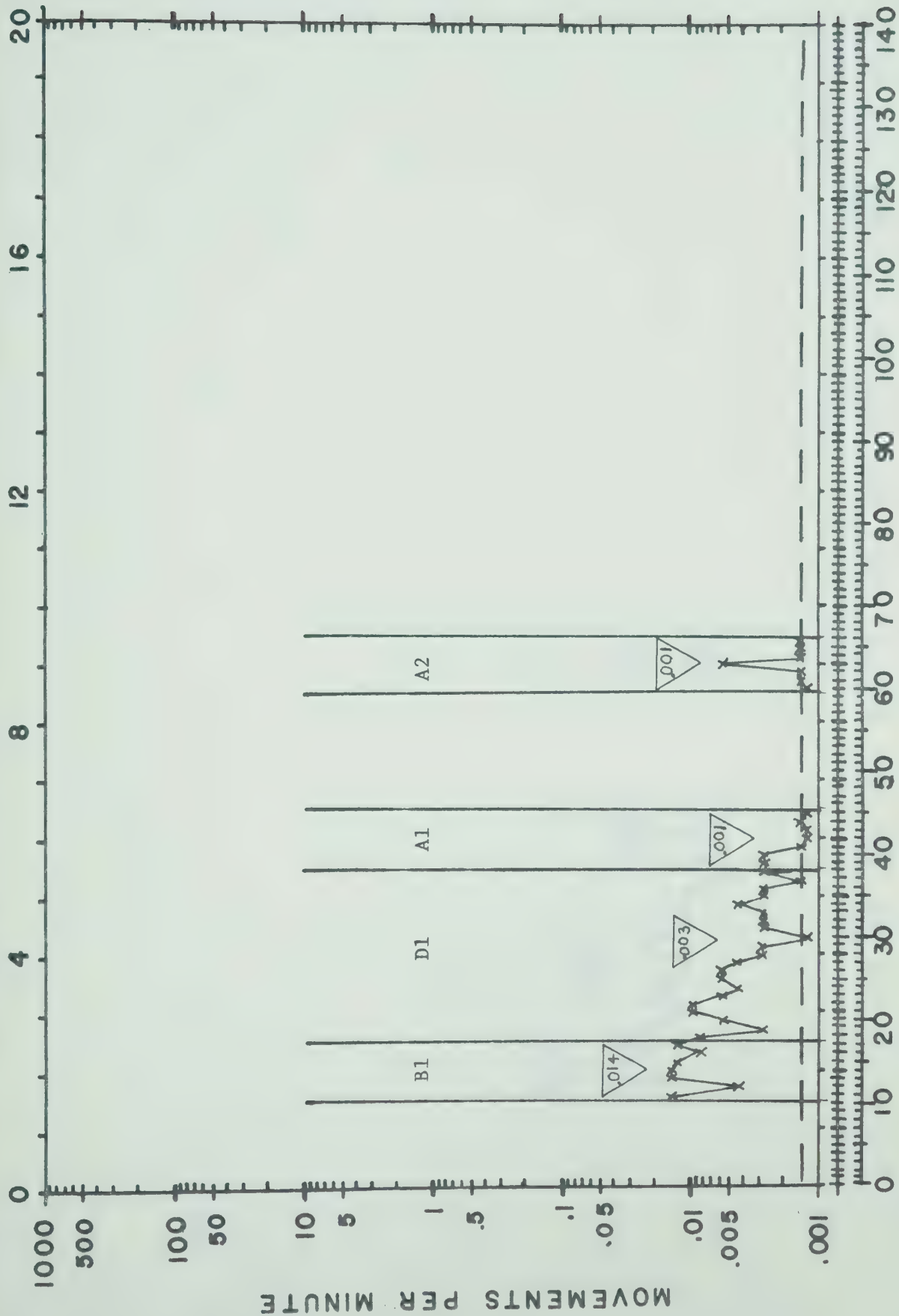
Case 6

LABEL

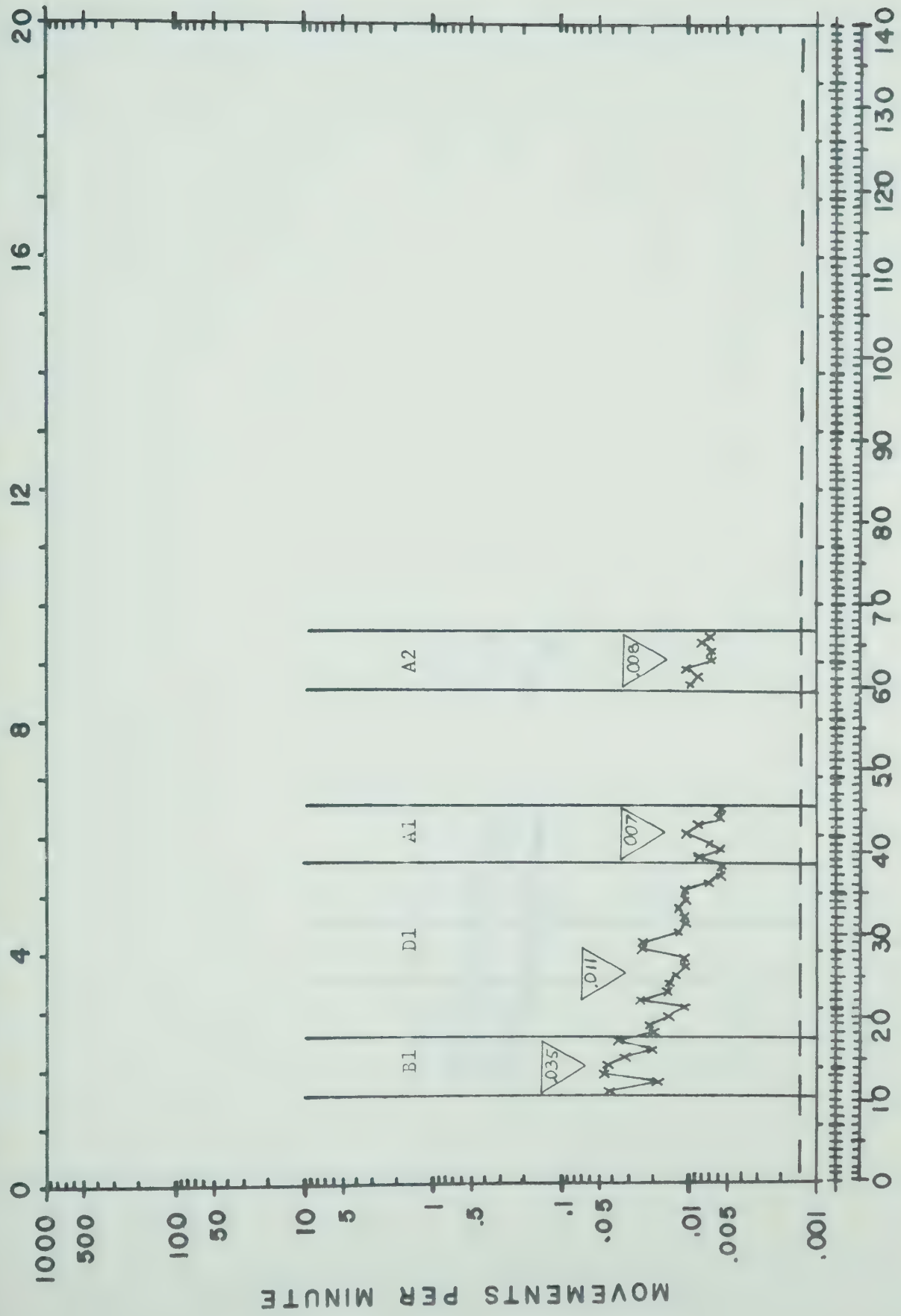
MOVEMENT

rubbing eyes

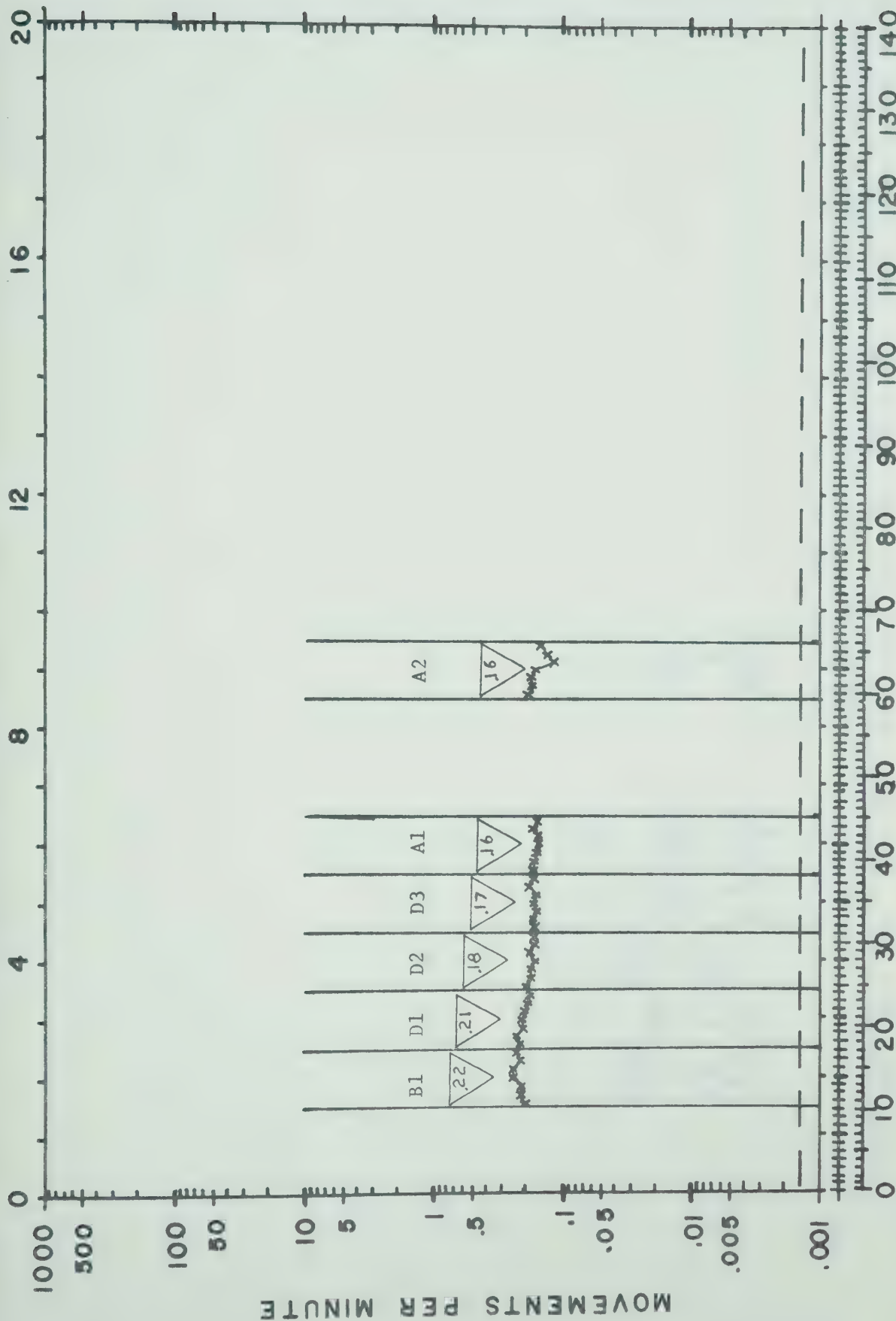




CALENDAR WEEKS



CALENDAR WEEKS

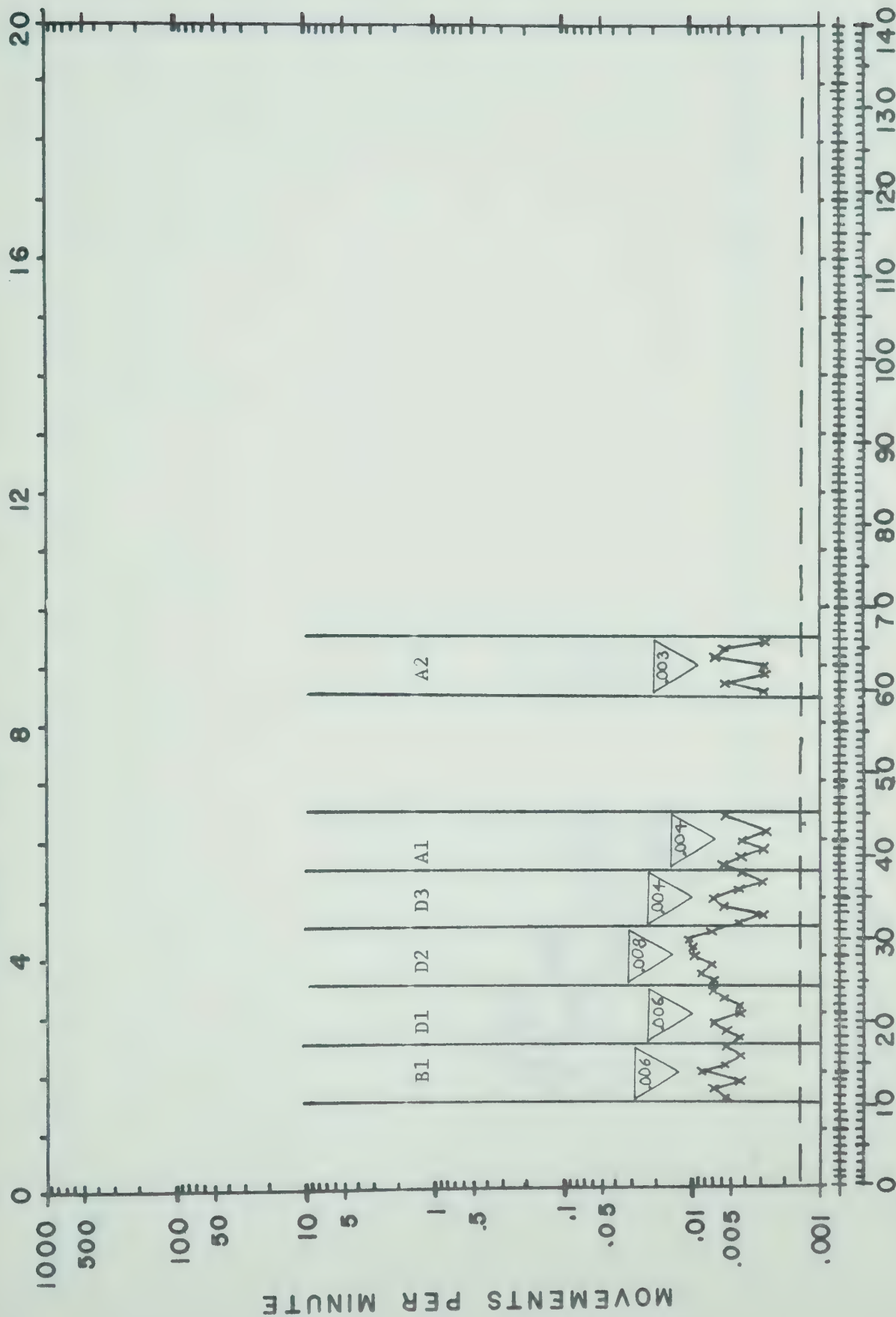


SUCCESSIVE CALENDAR DAYS

CASE 8

SUPERVISOR	ADVISER	E.M. MANAGER	E.M. BEHAVIOR	AGE	LABEL	MOVEMENT	food bites
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CALENDAR WEEKS



SUCCESSIVE CALENDAR DAYS

CASE 8

chewing lips
 BEHAVIOR AGE LABEL MOVEMENT

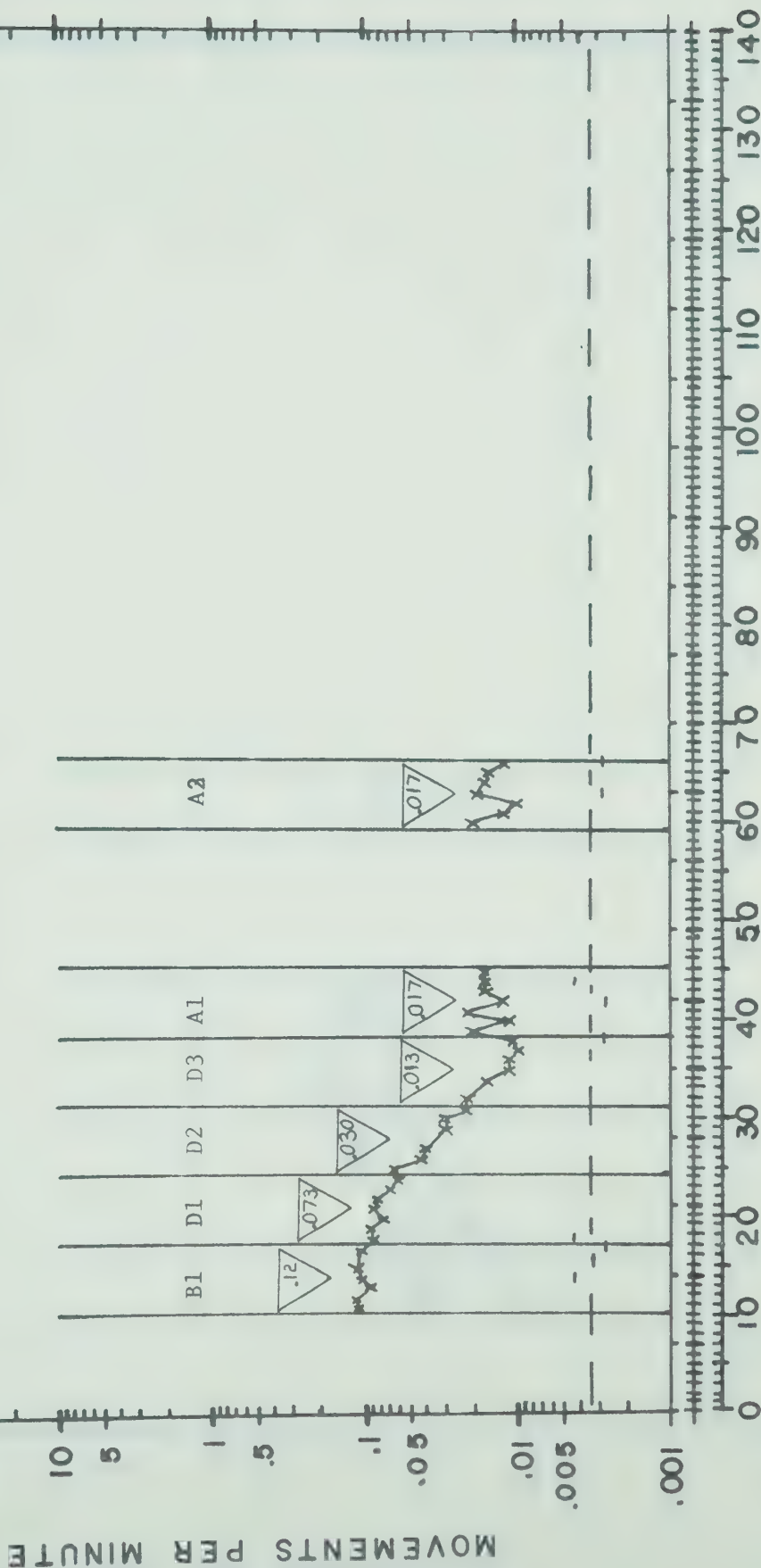
SUCCESSIVE CALENDAR DAYS

D.S. D.S. MANAGER

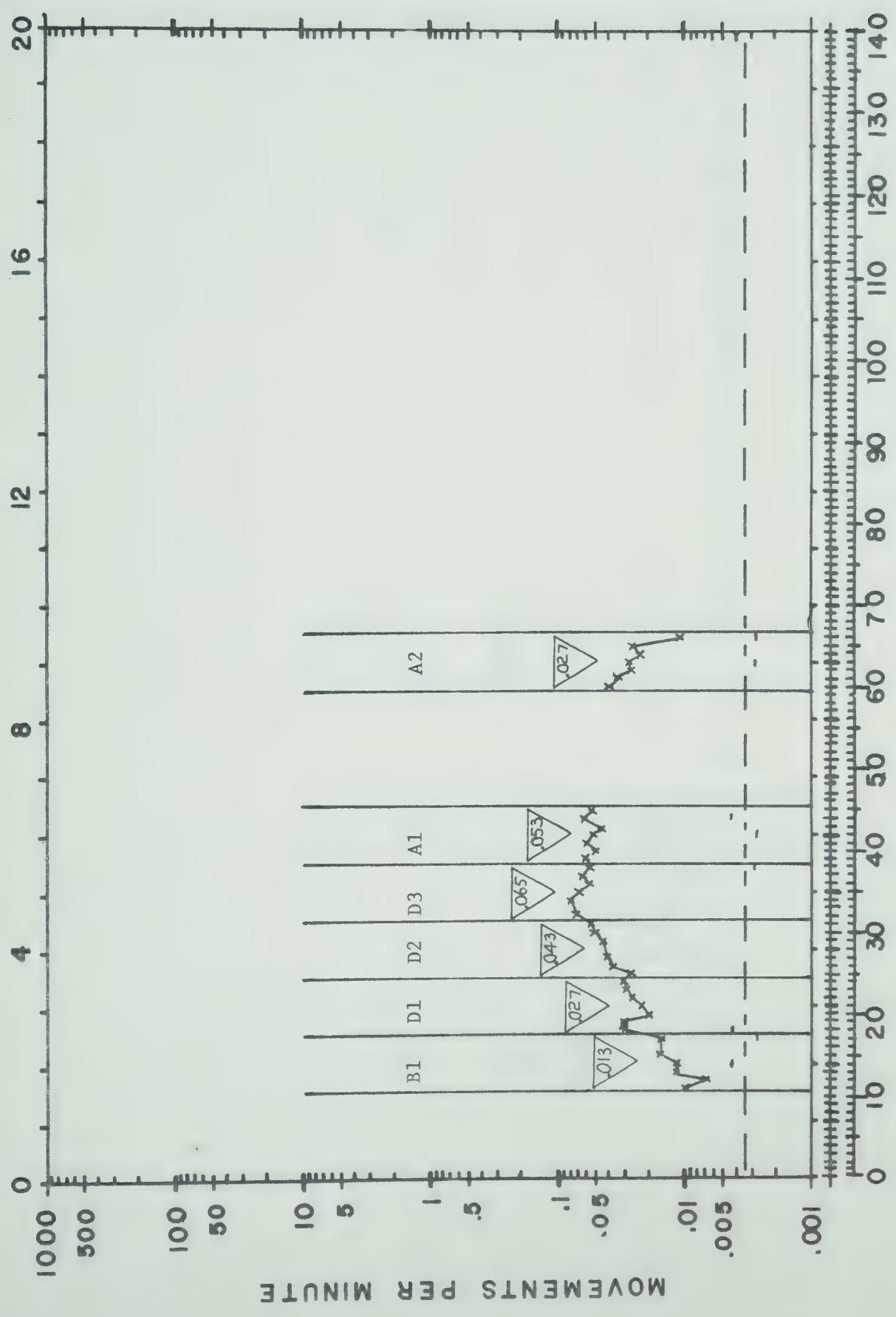
CASE 9

ADVISER

SUPERVISOR



CALENDAR WEEKS



thinking about
chewing lips

SUCCESSIVE CALENDAR DAYS

D.S.

CASE 9

SUPERVISOR

ADVISER

MANAGER

CASE 9

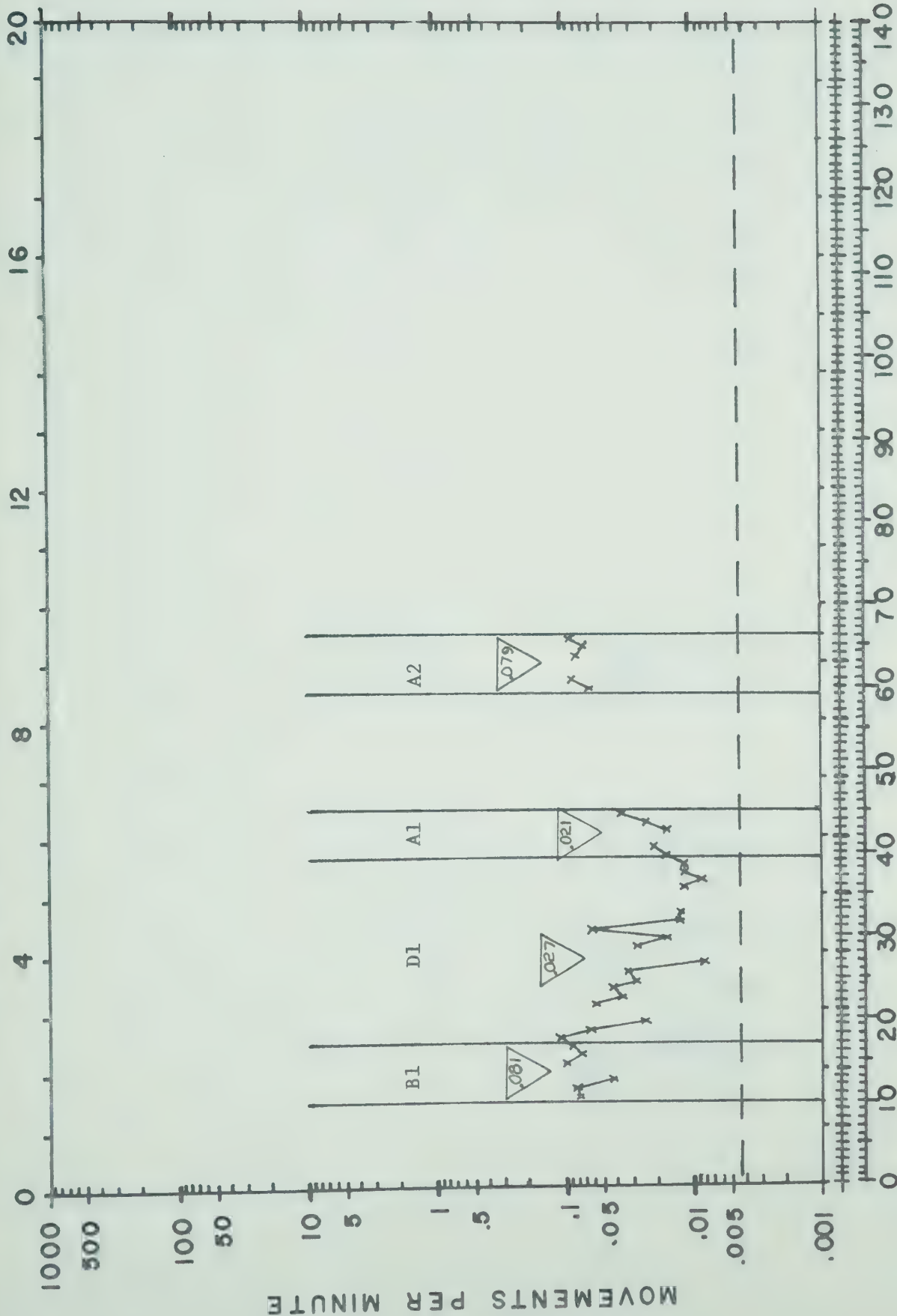
D.S.

BEHAVIOR

AGE

LABEL

MOVEMENT

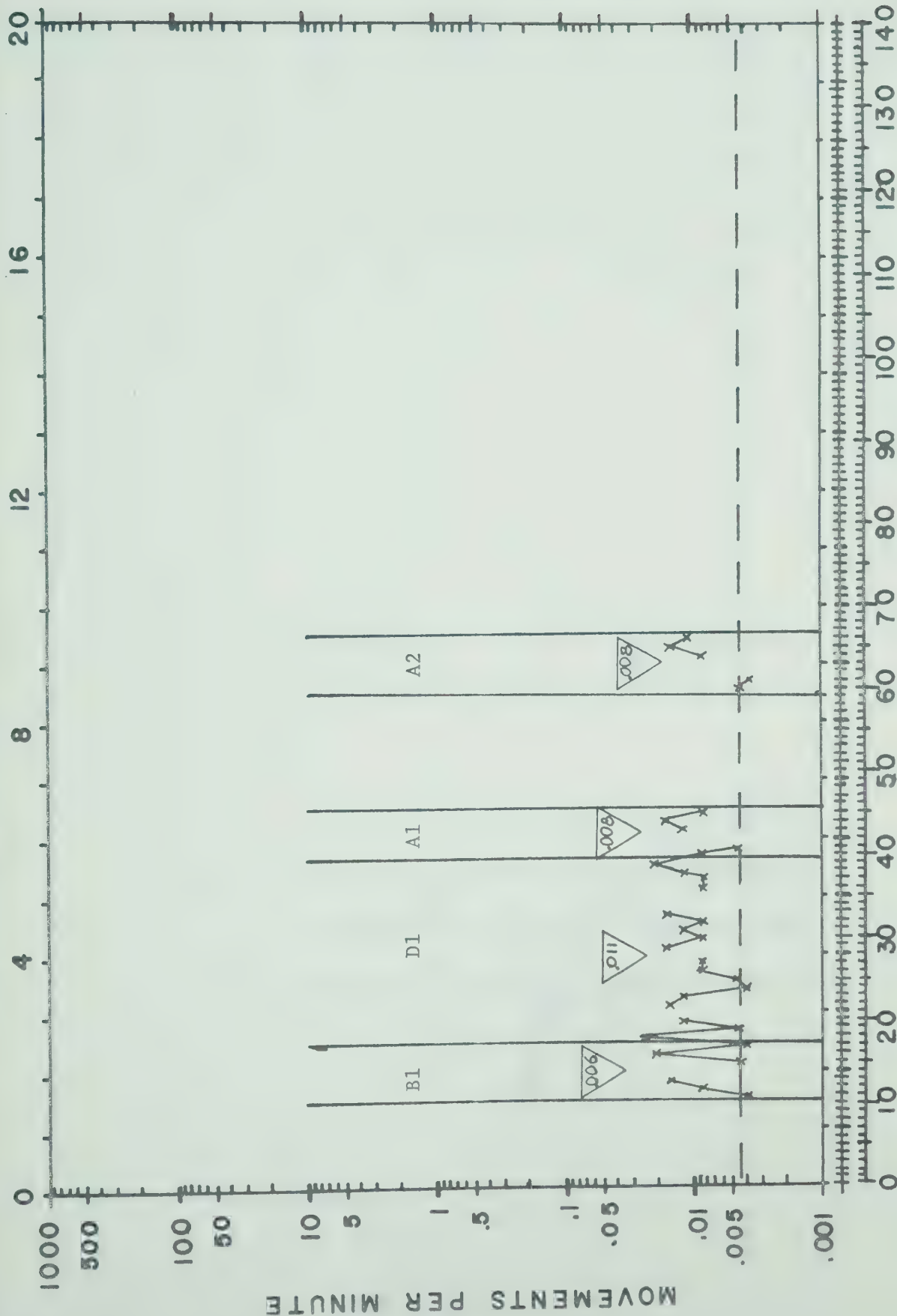


SUPERVISOR _____ ADVISER _____ P.T. _____ BEHAVIOR _____ AGE _____ LABEL _____ MOVEMENT _____

_____ Pencil in _____ mouth _____

SUCCESSIVE CALENDAR DAYS CASE 10

CALENDAR WEEKS

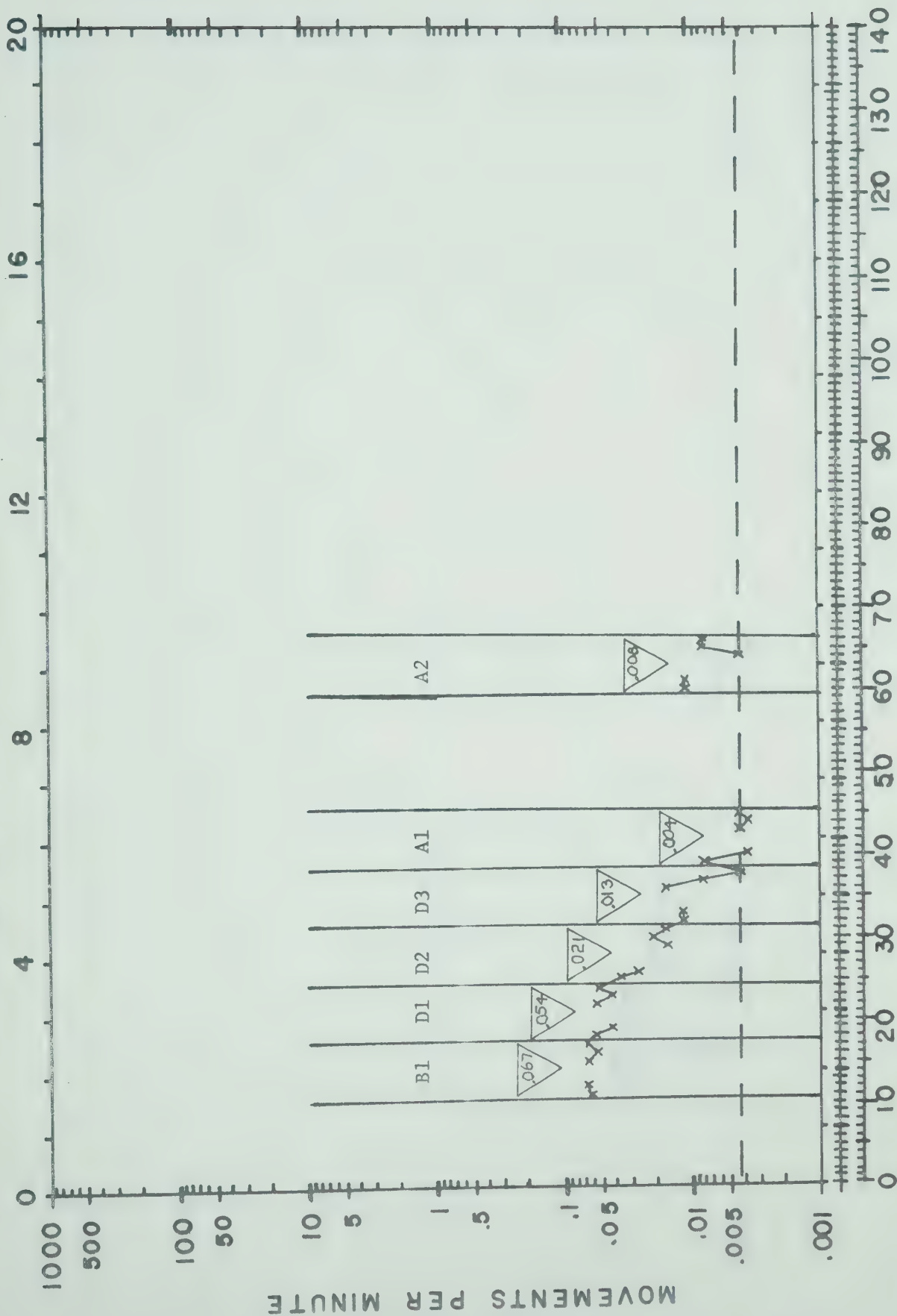


stopped penc: _____
 from entering mout _____
 P.T. _____
 BEHAVIOR _____ AGE _____ LABEL _____ MOVEMENT _____

SUPERVISOR _____ ADVISER _____ MANAGER _____

SUCCESSIVE CALENDAR DAYS _____ CASE 10

CALENDAR WEEKS



crossing legs
at knee

SUCCESSIVE CALENDAR DAYS

CASE 11

L.N.

MANAGER

ADVISER

SUPERVISOR

L. N.

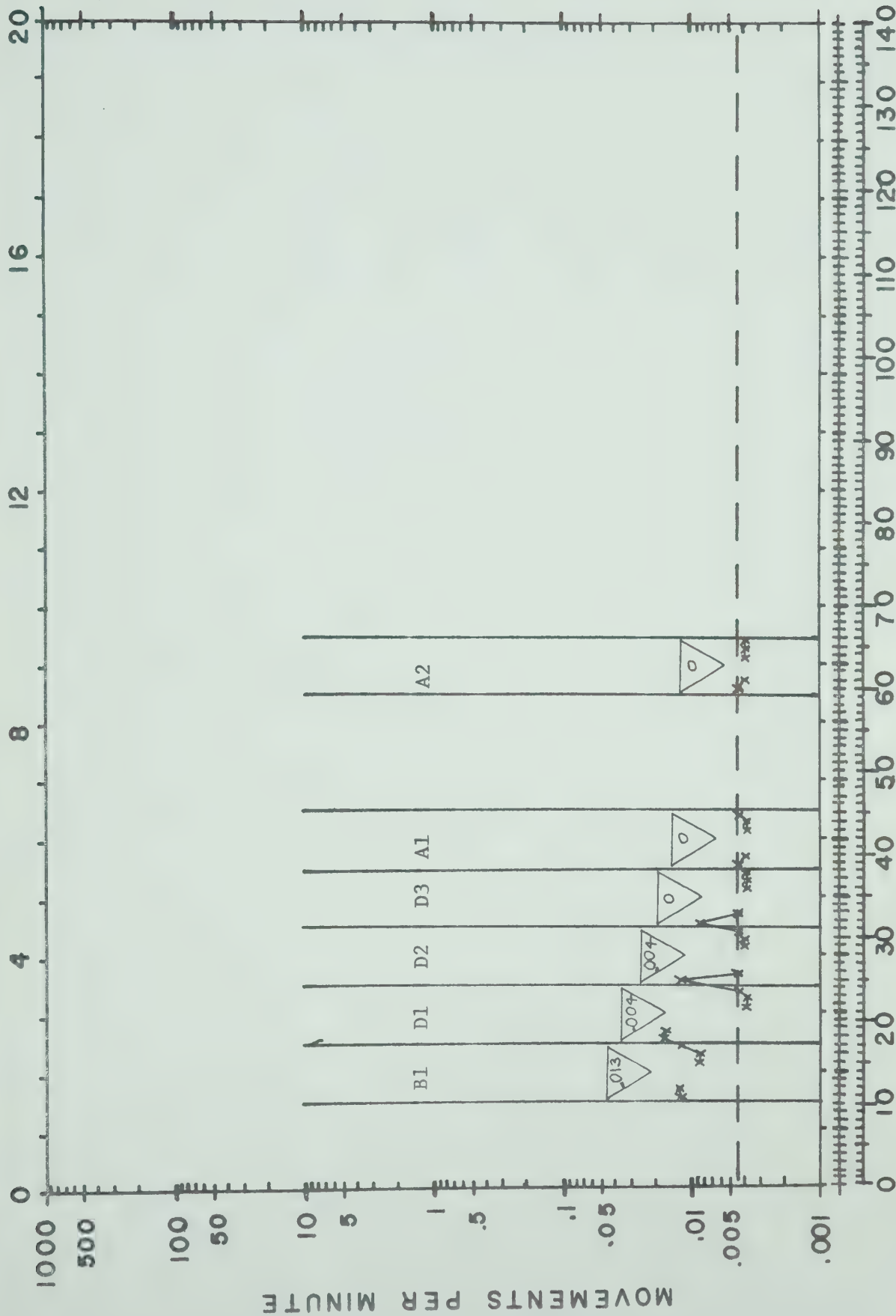
BEHAVIOR

AGE

LABEL

MOVEMENT

CALENDAR WEEKS



B30033